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RURAL Congestion Management System (CoMS)

2003 Report

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2003 CoMS Report

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2003 CoMS Report

Report Overview / CoMS Information

Interstate System

Rural NI-NHS

Rural Primary System

Secondary System

State Highways

Corridors

Functional Class / Special Facilities / Miscellaneous

Montana Department of Transportation

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Overview

The release of the decennial census had impacts to the 2003 CoMS analysis that will be most noticeable at the individual route level. Based on the 2000 census, Montana gained two new urban areas, (Belgrade and Whitefish) bringing Montana's urban area total to 15. Sidney, which no longer meets urban area requirements, will now be considered 'urban-like' for this, and future, CoMS analyses. With the release of the census, it is customary to see mileage shifts between systems. For newly designated urban areas, the Secondary System is impacted due to state statue that does not allow Secondarys within urban areas. The Secondary routes in the new urban areas lost their Secondary System designation and became Urban System routes. Therefore, with the designation of two new urban areas, the Urban System miles will increase and the Secondary mileage will probably decrease. On the other hand, when a city loses it's urban designation, it also loses it's Urban System. Therefore, with the loss of its urban designation, Sidney's former urban system routes could become either Secondary or off-system routes.

In addition to the mileage flux between systems, the expansion of the urban limits in Billings, Missoula, and Great Falls, also caused a decrease in Secondary and an increase in Urban system mileage in those areas as well.

The changes in route lengths affected the routes' overall CI, some positively, others negatively, as is evident in the individual route tables listed for each system (see Figures NHS-2, P-2 and S-2 for individual route listings). The following table provides a quick reference of the state's overall congestion indices by system. The table shows a comparison of the 1999, 2000 & 2001 CIs to the projected CIs in five-year increments. Due to staffing constraints, traffic information is only available on five State Highways therefore an individual analysis was run on each of those five routes but no statewide analysis was done.

Statewide Systems' Congestion Indices

System	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
Interstate	94	94	94		93		91		90		88	
NI-NHS	76	76	75	77	74	75	72	73	70	72	68	70
Primary	79	80	80	80	78	79	77	78	76	76	74	75
Secondary	92	92	92	92	91	91	91	91	90	90	89	89

[1] Traffic Year
[2] Existing Highway Network
[3] Existing plus Committed Highway Network
Shaded cells indicate there are no capacity enhancing projects for this system.

The following table illustrates the percent of miles, by system, in each of the level of service ranges. The percentages are a comparison of the current traffic year (2001), to the projected traffic year (2021).

Percent of Miles by Level of Service

		System							
		Interstate		NI-NHS		Primary		Secondary	
		2001	2021	2001	2021	2001	2021	2001	2021
Level of Service	A	97.7	81.8	42.7	31.6	41.6	33.1	80.2	73.1
	B	2.2	13.8	29.2	25.8	38.2	35.4	16.5	19.5
	C	0.1	3.7	19.4	23.0	14.9	18.6	2.9	4.7
	D	0.0	0.6	6.0	9.5	4.0	8.1	0.3	2.2
	E	0.0	0.1	2.6	8.4	1.3	4.1	0.1	0.4
	F	0.0	0.0	0.0	1.7	0.0	0.7	0.0	0.1

CoMS Information

CoMS Definition

The Congestion Management System, or **CoMS,** as it is commonly called, is a database that utilizes several techniques (both automated and manual) to produce congestion indices **(CIs)** for the majority of Montana's "on-system" roads. The CoMS measures the current and in the case of the rural corridors, future (predicted) "operational health" of the highway systems.

On the rural highway corridors, CIs consist of point values ranging from 0 – 100 and are a numerical representation of the levels of service (LOS). Numerical ranges were developed 1) to accommodate the input for CoMS equations and 2) to identify any analysis segment/corridor's relative position within a LOS range.

The following table represents the CI range for each LOS.

LOS	CI RANGE
A	85 – 100
B	70 – 84
C	55 – 69
D	40 – 54
E	25 – 39
F	0 – 24

There are six levels of service defined for each type of facility (i.e. two-lane, multi-lane, and freeway). These LOSs are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions. The definitions for these ranges vary based on the type of facility being analyzed, but following are *general* definitions of the operating conditions that exist at each level.

LOS A – Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Almost no platoons are observed.

LOS B – The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. Minor disruptions are still easily absorbed at this level.

LOS C – Freedom to maneuver within the traffic stream is noticeably restricted. There are noticeable increases in platoon formation, platoon size, and frequency of passing impediments. Minor disruptions may be expected to cause serious local deterioration in service, and queues may form behind any significant traffic disruption.

LOS D – Freedom to maneuver is more noticeably limited and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing because the traffic stream has little space to absorb disruptions.

LOS E – Roadway is operating at capacity. Operations at this level are volatile there being virtually no usable gaps in the traffic stream.

LOS F – Describes breakdowns in vehicular flow.

Congestion Definition

The Department, as part of the Performance Programming Process (P^3), has adopted congestion based performance objectives for each of Montana's highway systems, excluding local roads. A level of service deemed 'acceptable' was set for each system. For the Interstate System, the level is a LOS greater than C and for the remaining systems, NI-NHS, Primary, Secondary and State Highways, the acceptable LOS threshold has been set at greater than D. The "hot spot" maps in each system section, show the sections of roads that do not meet these acceptable thresholds.

Highway Systems Addressed in the CoMS

In the previous CoMS report, analyses were done on the Interstate, Non-Interstate National Highway System (NI-NHS), Primary, Secondary, State Highway, and Urban Systems. However, due to staffing and time constraints, the Urban System was not analyzed for this report. Also, due to staffing constraints in the Traffic Section that prohibit data collection on the State Highway routes, the congestion analyses in this report are limited to the five routes that have traffic data available. The roads analyzed in this report comprise approximately 11,377 miles of Montana's 69,663-mile public road system. While these roadways make up only 16% of total public road miles, they carry more than 75% of the statewide total vehicle miles of travel. It can safely be assumed the vast majority of the congestion that does occur, occurs somewhere on these systems.

For each of these systems, excluding the Interstate, analyses are done only on the rural portions of the routes. Each analysis is conducted by route segment and is reported by system, by route, and by corridor. Additionally, CoMS analyses are conducted by functional class groups, **but only on the highway systems described above**. The functional class groups consist of principal and minor arterials, major and minor collectors, urban collectors, and local roads.

New this year, as part of the TIS Route Naming compliancy protocol, CoMS has added a Corridor section. A LOS for each individual Corridor analyzed by CoMS can be found in this section, along with a statewide Corridor LOS.

CoMS Uses

MDT's CoMS is the first step in the management of congestion in that it provides the information necessary for reactive congestion mitigation actions as well as enabling MDT to be pro-active in preventing future congestion.

While CoMS reflects a significant step forward in measuring the "operational health" of Montana's highway infrastructure, MDT and local governments have not dismissed congestion issues in the past. There are nine urban area comprehensive transportation plans which, in part, analyze roadway and intersection capacity issues in each respective area.

Forecasting Abilities

In addition to measuring current year congestion indices, the CoMS can predict or forecast future CIs on the 11,000+ miles of rural highways included as part of the analysis. Forecasting is accomplished in five-year increments for twenty years, beginning five years from the traffic data 'base year' being used for the existing analyses. For the purpose of this 2003 CoMS summary report, the traffic data base year utilized is 2001 traffic data, therefore, the forecasted years are 2006, 2011, 2016, and 2021.

Highway Network Analyses

The CoMS analyzes two types of highway networks for the rural corridor portions of the highway systems. The "**Existing**" highway network reflects the highway attributes and geometrics as they currently exist. Current and forecasted traffic volumes are assigned to the "**Existing**" system to determine the current CI as well as the effect of anticipated traffic growth on the highway systems if no improvements were made. The "**Existing plus Committed**" **(E+C)** network includes the existing highway attributes and geometrics plus those from any projects in the TCP that would affect the capacity of a highway. The TCP projects are the "committed" portion of the E+C analyses. By analyzing the E+C networks, the effect of planned projects on congestion can be determined before they are constructed.

CoMS Performance and Reporting Timeframes

The CoMS analyses are updated annually after the previous year's traffic data has been processed and is available for use. A CoMS report will be printed on a biennial basis. As the updated TIS images become available throughout the year, the on-system routes will be re-inventoried and the CoMS database updated.

For comparison purposes, two previous years' CIs will be tracked in each CoMS report.

Analysis Techniques

The CoMS utilizes the capacity analysis techniques in the third edition of the ***TRB Highway Capacity Manual*** (HCM).

Data Sources

Information used in the CoMS is gathered from the TIS Roadlog, TIS Traffic file, MDT digital image viewer, and field inventories.

Data Items

Data items used in the CoMS include lane widths, shoulder widths, no passing zones, terrain types, surface types (paved vs. unpaved), traffic volumes by vehicle type, median types, lateral clearances, number of lanes, and directional distribution of vehicles. To accommodate other non-CoMS needs within MDT, access points and rumble strip location data was also collected on a one-time basis only. While we do not collect access points as part of our regular inventory we have continued to update the rumble strip data as necessary.

Miscellaneous CoMS Capabilities

This summary report contains general information about the "operational health" of the highway systems. However, the CoMS is capable of generating information not related to congestion indices themselves. For example, the CoMS can be queried to identify roads which have specified shoulder widths, those that have travel lanes of specified widths, terrain types, etc. The query type possibilities are limited only by the data types contained in the system.

CoMS Limitations

Inherent in the design of the CoMS are analysis capabilities at the route segment level. On the rural systems alone, there are in excess of 26,600 analysis segments. With information this detailed, there is an occasional tendency toward assuming it is of project design level quality. However, the CoMS was designed as a systems-level planning tool and should not be considered for use at the project design level.

CoMS History

Congestion Management Systems, by whatever name given them, are not new to the world of transportation. They have been in service in different forms in some of the more populous areas for many years. Many of these systems' geneses may have resulted out of necessity, being reactive rather than proactive in nature. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) required each state to develop six management systems, one of which was a CoMS. On July 20, 1995, FHWA issued a memorandum which included preliminary indications that the requirement for the management systems may be reduced or eliminated. In response to staff concerns, the MDT Director's office issued an August 30, 1995 memorandum stating support for the continued development/enhancement of all six systems, regardless of whether or not the requirements would be reduced or eliminated. (The federal requirement for the systems was officially dropped on November 28, 1995).

The CoMS is only the first step in congestion management. It provides the information necessary to assess the current and future operational health of Montana's highway system. Armed with this information, MDT

planners, engineers, program developers, and the public can determine the best course of congestion mitigation/prevention actions on our highways.

CoMS Development Status
(as of June 2003)

Several divisions within the Department are undergoing significant changes in the way data is collected, analyzed, stored, and shared. One of the ways CoMS is being directly affected by these changes is from the new process being used by our GPS/GIS staff to reconcile the new images with the last cycle of images. The present unavailability of the last cycle prevents us from utilizing the most current geometric data when analyzing routes to determine the LOS.

Also effecting CoMS are the complications resulting from the system not being TIS compliant. CoMS is currently base route driven while TIS is migrating away from the base route and is moving toward utilizing only the Departmental route and Corridor naming conventions. This conversion, when complete, will enable the CoMS to perform analyses by departmental route or corridor rather than the outdated, and confusing, base route-naming scheme.

The 2003 CoMS report includes results on all available rural corridors on the Interstate, NI-NHS, Primary, Secondary and State Highway systems.

The CoMS has the ability to analyze the MDT established Corridors on a statewide level as well as on an individual basis. As such, a Corridors section has been added to this report for users who prefer to look at results in that format.

Further details are included in each specific section of this report.

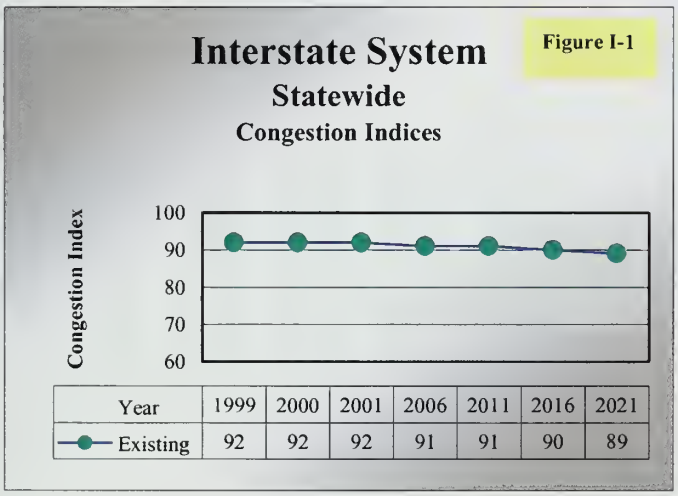
Interstate System

General Information

Because of the high-level controlled access design features of the Interstate System, the entire system was analyzed using only the rural freeway capacity analysis techniques. It was not considered necessary to utilize any other techniques where the Interstate System passes through urban areas.

Existing Network

As illustrated in **Figure I-1**, the overall, statewide existing network CI is currently 92 (LOS A) and will not fall below a CI of 89 (LOS A) within the next 20 years. The CI (92) remained constant from 1999 through 2001.



E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. In the case of the Interstate System, there are no capacity enhancing projects planned. Therefore E+C Network CIs were not calculated for the Interstate System.

Individual Interstate Routes

Figure I-2 illustrates the Existing network CIs by individual routes.

Figure I-2

Route No.	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
I-15	96	96	96		95		95		94		93	
I-90	91	91	91		89		87		85		82	
I-94	96	96	96		96		95		95		94	
I-115	97	97	96		96		95		95		94	
I-315	78	73	61		55		50		44		37	

Those CI's in red reflect congestion indices of LOS C or lower (CI <70)
Note: All Interstate routes are considered as 100% rural.
[1] Traffic year
[2] Existing Highway Network
[3] Existing plus Committed Highway Network
No capacity enhancing projects planned for these routes

District Comparisons

Figure I-3 (see page 2) compares the total Interstate mileage in each of the Financial Districts.

Figures I-4 through **I-8** (see page 2) compare the overall Interstate system CIs in each of the Financial Districts.

Figures I-9 through **I-11** (see pages 3-5) are maps which illustrate CIs on the existing highway network for the entire Interstate system for the years 2001 through 2021 in ten-year increments.

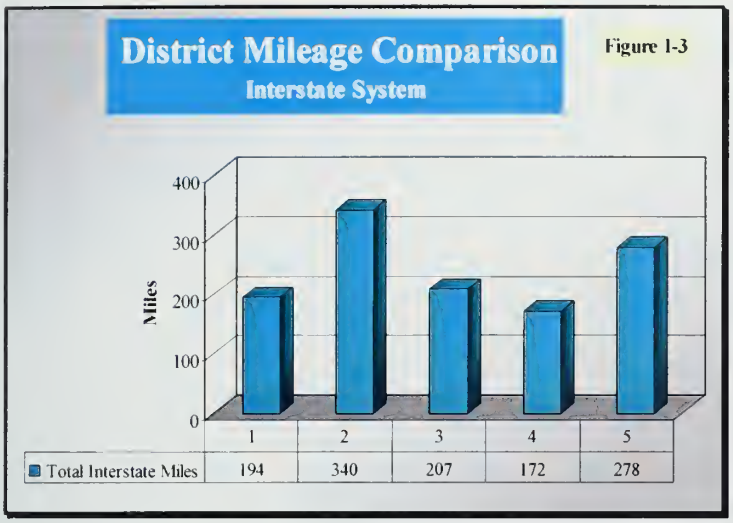
Hot Spots

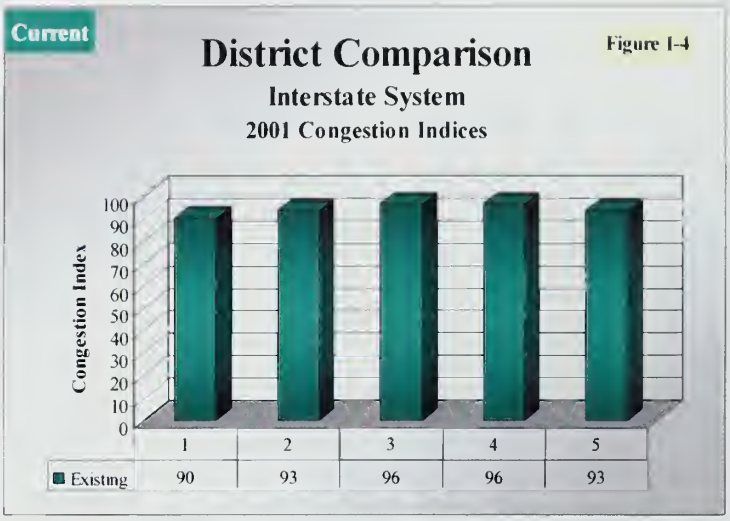
In the 1997 CoMS report, any segment with a LOS less than C was identified as a hotspot. With the implementation of the Performance Programming Process (P^3), the Department has adopted an 'acceptable level-of-service' for each of the systems. The Department's acceptable standard for the Interstate System is a CI ≥ 70 (LOS B and above).

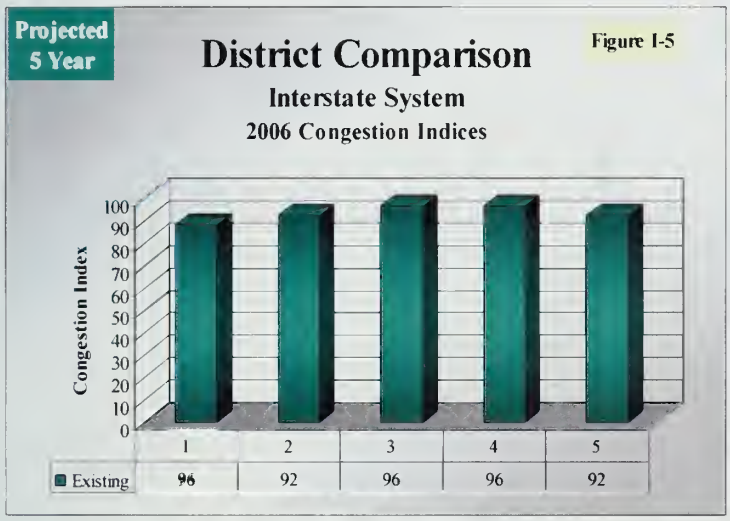
Figures I-12 and **I-13** (see page 6) have been developed to better illustrate segments of the Interstate that currently have, or are projected to have, service levels of less than B (LOS < 70).

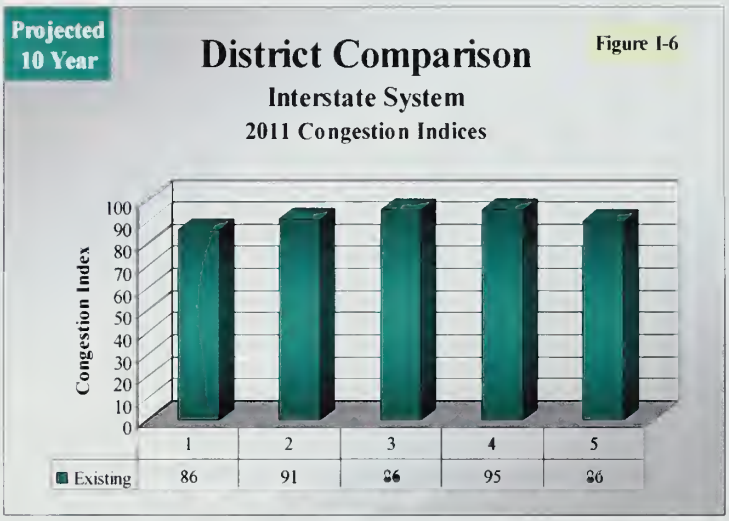
Figures I-14 and **I-15** (see page 7) compare the total number of miles of Interstate in each Financial District against the numbers of miles of Interstate operating at or below a CI of 70 (less than LOS B).

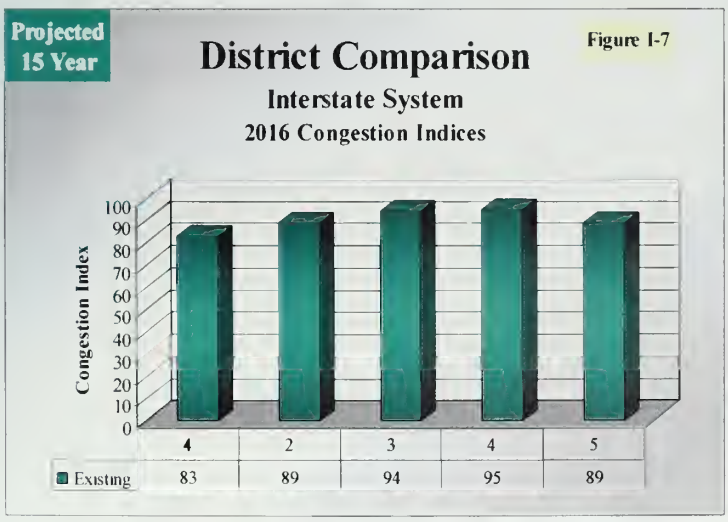
Interstate


District Mileage Comparison
Interstate System
Figure I-3
Miles
400
300
200
100
0
1
2
3
4
5
Total Interstate Miles
194
340
207
172
278


Current
District Comparison
Interstate System
2001 Congestion Indices
Figure I-4
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
90
93
96
96
93


Projected
5 Year
District Comparison
Interstate System
2006 Congestion Indices
Figure I-5
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
96
92
96
96
92


Projected
10 Year
District Comparison
Interstate System
2011 Congestion Indices
Figure I-6
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
86
91
96
95
96


Projected
15 Year
District Comparison
Interstate System
2016 Congestion Indices
Figure I-7
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
83
89
94
95
89

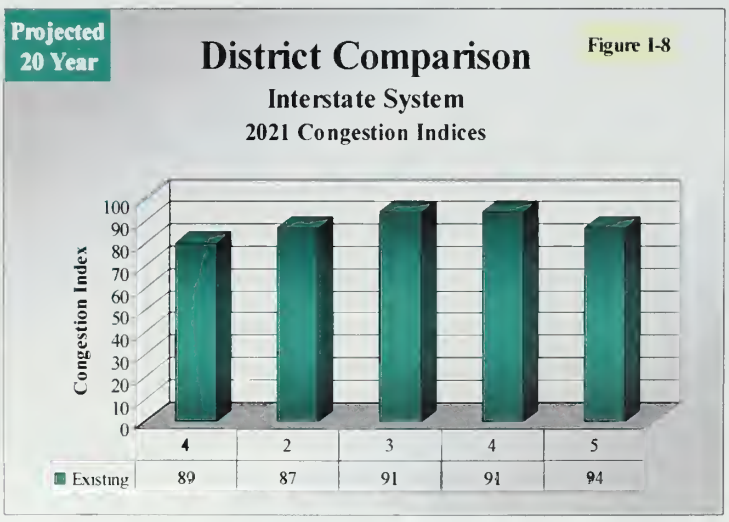
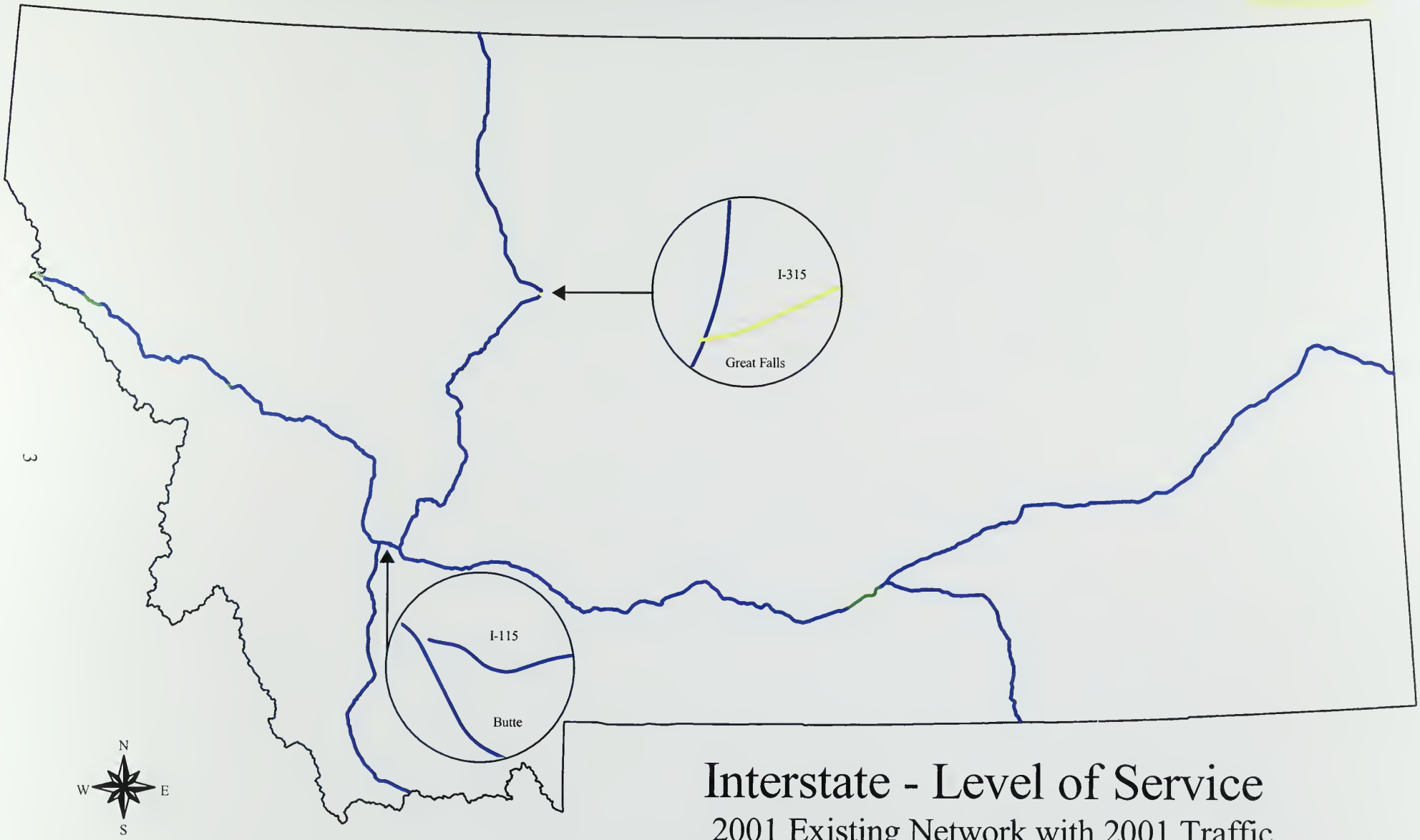

Projected
20 Year
District Comparison
Interstate System
2021 Congestion Indices
Figure I-8
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
89
87
91
91
94

Figure I-9



Interstate - Level of Service

2001 Existing Network with 2001 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

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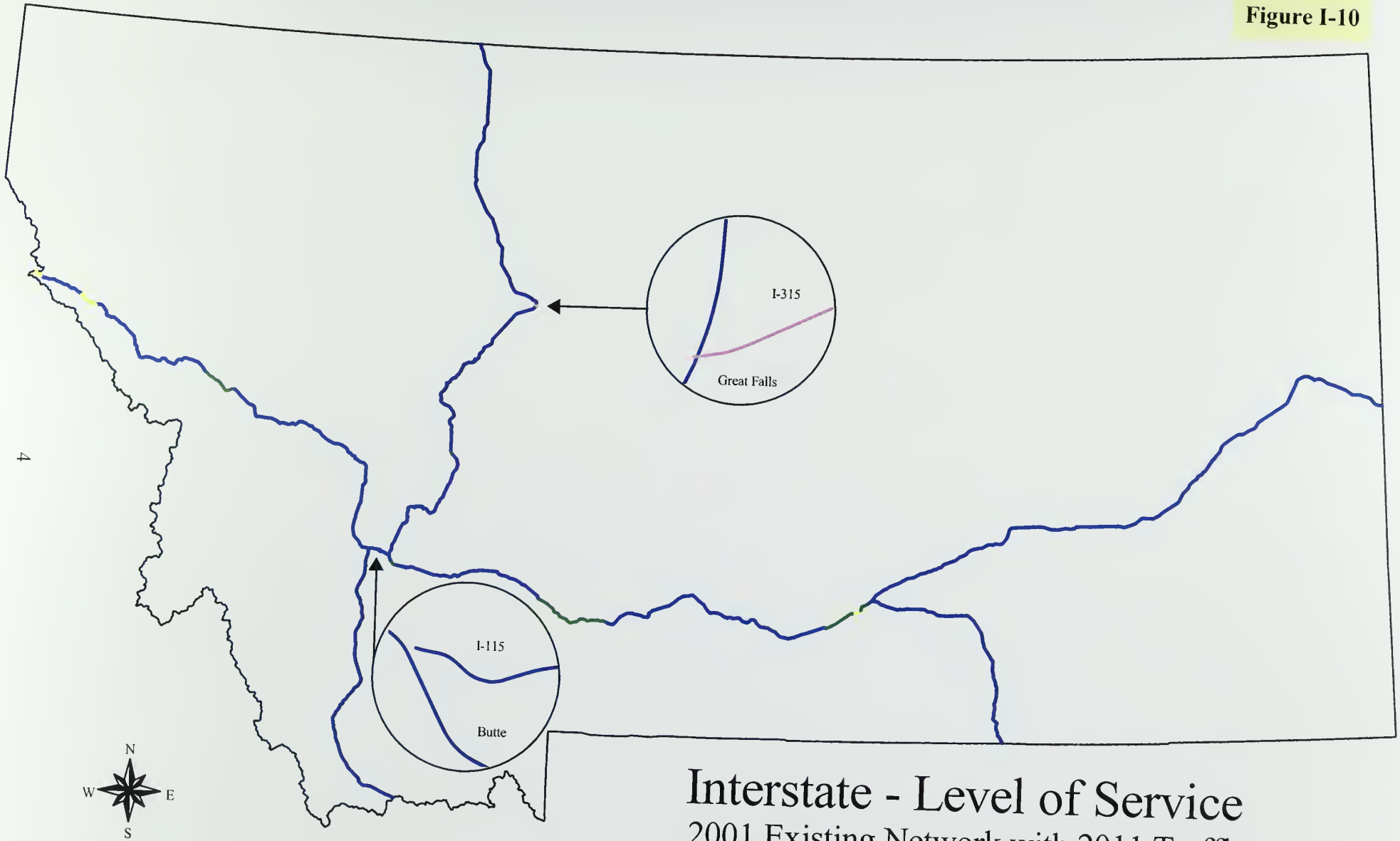
Figure I-10



Interstate - Level of Service

2001 Existing Network with 2011 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

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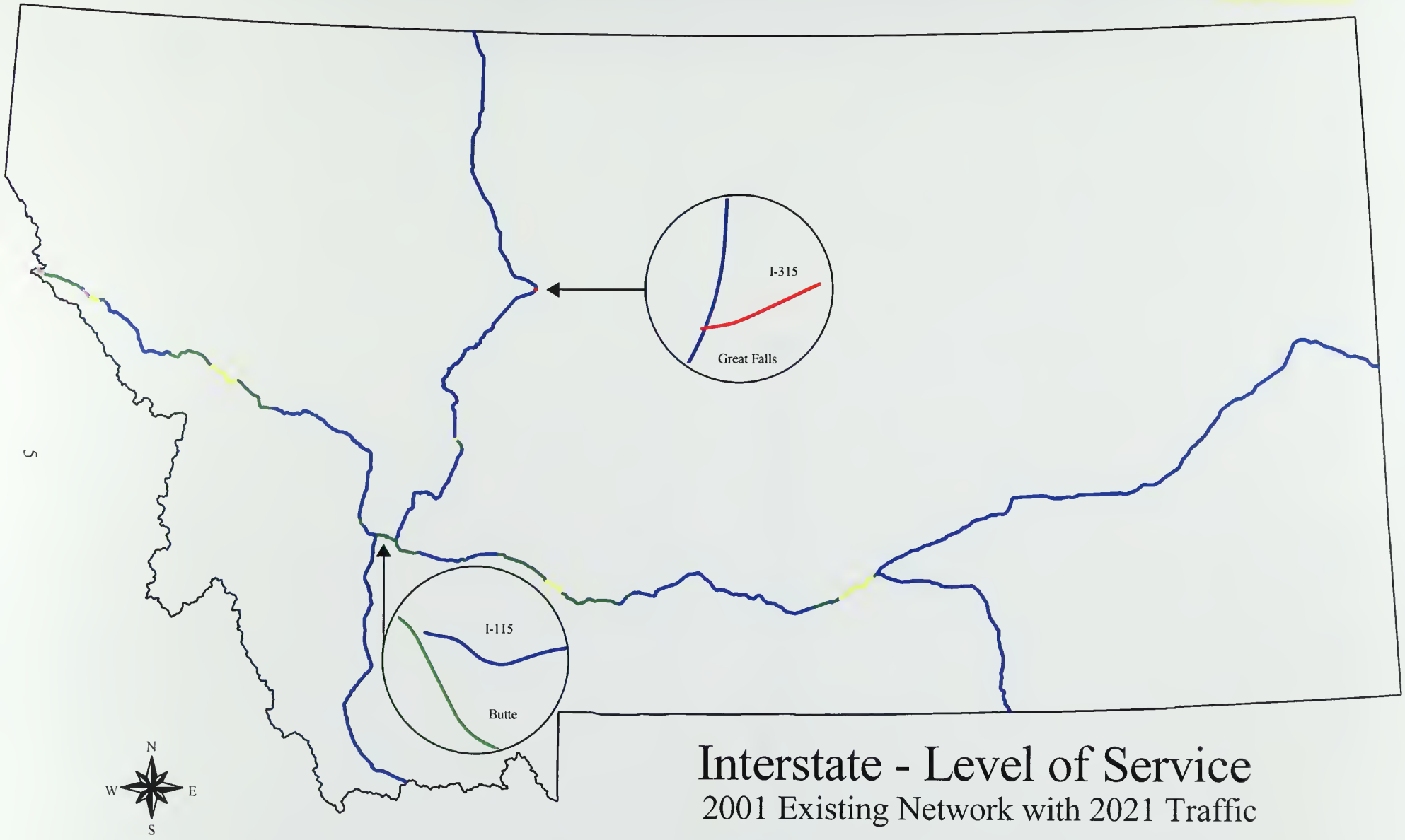
Figure I-11



Interstate - Level of Service

2001 Existing Network with 2021 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

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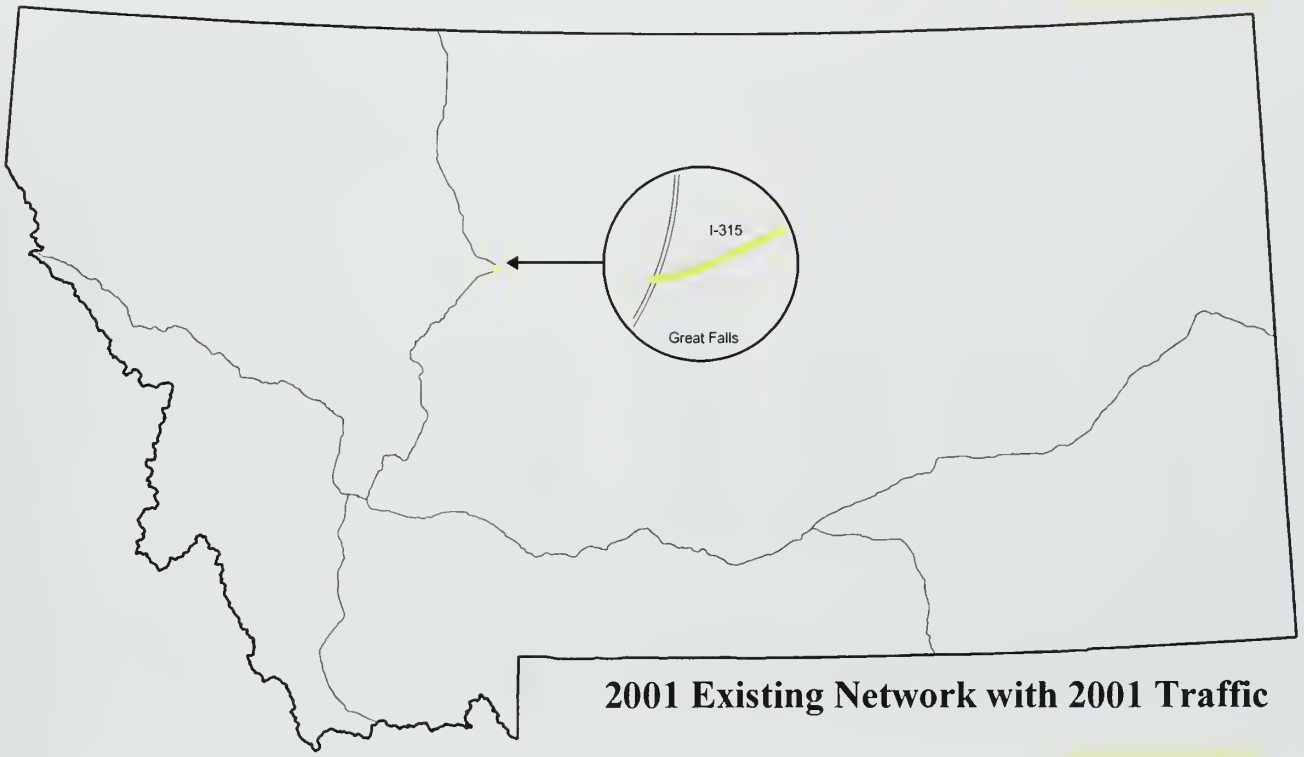
Interstate
Level of Service "Hot Spots"

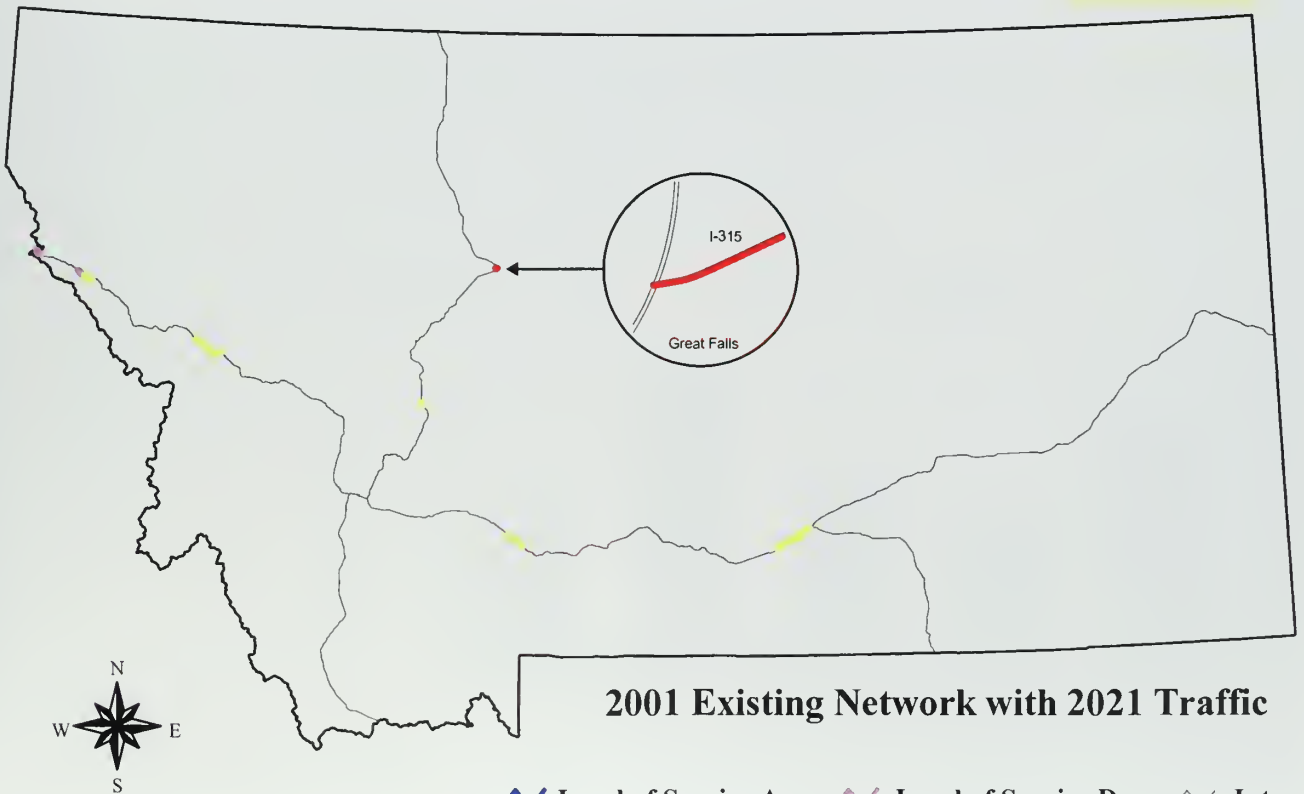
(Congestion Index < 70 - LOS C or Lower)

Figure I-12



2001 Existing Network with 2001 Traffic

Figure I-13



2001 Existing Network with 2021 Traffic

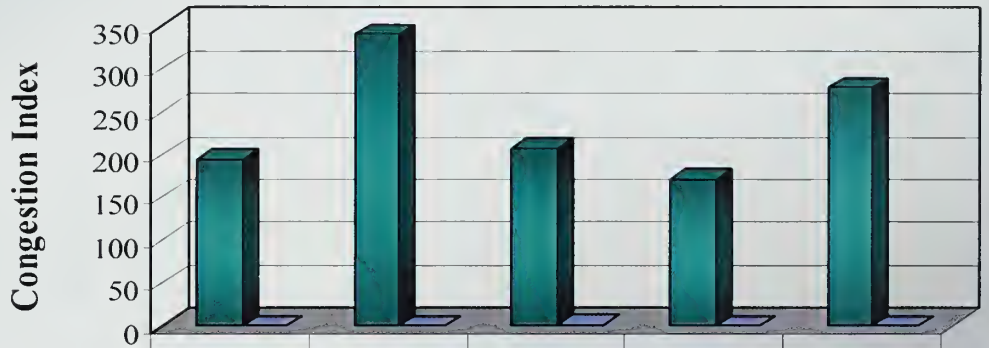
- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate

Figure I-14

2001 District Comparison "Hotspots"

Interstate System

Congestion Index < 70 (LOS C or lower)



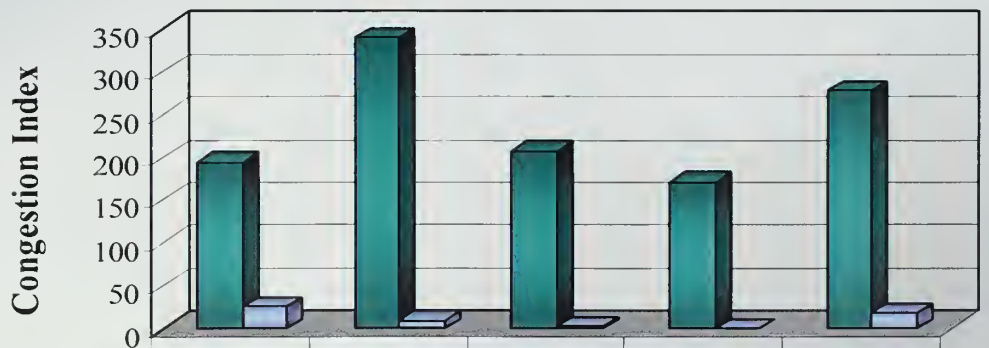
	1	2	3	4	5
Total Interstate Miles	194	340	207	172	278
Miles of CI < 70	0	0	1	0	0

Figure I-15

2021 District Comparison "Hotspots"

Interstate System

Congestion Index < 70 (LOS C or lower)



	1	2	3	4	5
Total Interstate Miles	194	340	207	172	278
Miles of CI < 70	25	9	2	0	17

Rural Non-Interstate National Highway System

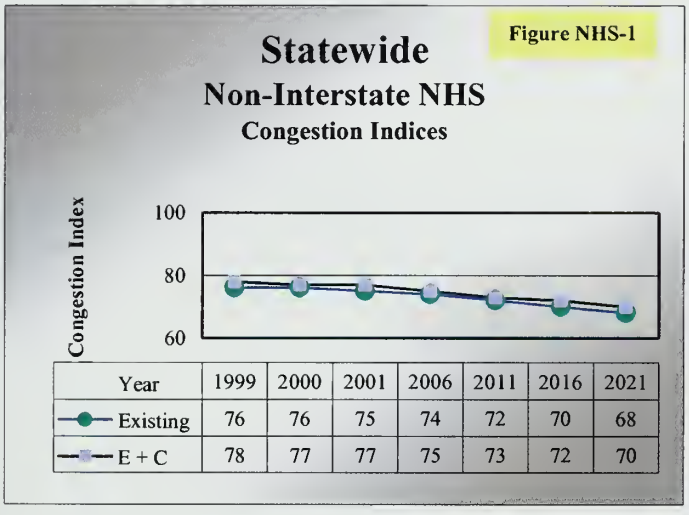
General Information

The following analysis reflects only the rural portions of the NI-NHS.

Existing Network

As illustrated in **Figure NHS-1**, the overall, statewide existing network CI is currently 75 (LOS B) and will not fall below a CI of 68 (LOS C) within the next 20 years. Although the overall CI has varied slightly each year since 1996, the overall LOS has remained constant at a LOS of B throughout.

Figure NHS-1



Year	1999	2000	2001	2006	2011	2016	2021
Existing	76	76	75	74	72	70	68
E + C	78	77	77	75	73	72	70

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The projects that have been let but have not yet been re-inventoried due to lack of current images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	Meriwether-East	N-1	594	13.07
2.	Lothair-East	N-1	1212	13.42
3.	Pleasant Valley	N-1	1282	8.1
4.	Columbia Heights-East	N-1	1290	2.6
5.	Cut Bank-West	N-1	1310	8.01
6.	US 2-Saco	N-1	1515	0.84
7.	Dodson-East	N-1	1516	4.2
8.	Nashua-E & W	N-1	2144	10.2
9.	Bainville-E & W	N-1	2145	9.81
10.	Oswego-E & W	N-1	2147	8.06
11.	Havre-East	N-1	4049	10.2
12.	Brockton-East	N-1	4058	13.49
13.	Big Muddy Creek-East	N-1	4334	4.87
14.	Vaughn-Sun River	N-3	1504	7.63
15.	Warren-N & S	N-4	1423	12.75
16.	Bridger-South	N-4	3179	13.08
17.	Somers-Ashley Creek	N-5	1012	5.6
18.	Ashley Creek-Kalispell	N-5	1012	2.49
19.	2.49 mi. N of Stillwater River-North	N-5	1061	3.5
20.	Stillwater River-North	N-5	1061	1.3
21.	South of Ravalli-Medicine Tree	N-5	1744	4.7
22.	Sula-N & S	N-7	1285	8
23.	Florence-North	N-7	1503	2.3
24.	Lolo-South	N-7	1503	5.6
25.	Hamilton-N of Woodside	N-7	2015	4.69
26.	N of Woodside-Victor	N-7	2015	6.91
27.	Victor-N of Stevensville WYE	N-7	2016	7.69
28.	N of Stevensville WYE-Florence	N-7	2016	5.99
29.	Townsend-Urban	N-8	2200	1.4
30.	US 287 Pass Lane-Baum Road	N-8	3377	1.82
31.	US 287 Pass Lane-N of Silos	N-8	3377	2.61
32.	US 287 Pass Lane-S of Toston	N-8	3377	2.61
33.	US 287 Pass Lane-N of Three Forks	N-8	3377	3.22
34.	1.24 mi. S of Winston-South	N-8	4305	11.26
35.	Shawmut-West	N-14	4075	8.4
36.	18.64 mi NE of Glendive-NE	N-20	4053	10.3
37.	Volborg-N & S	N-23	1514	14.7
38.	Broadus-East	N-23	1517	15.41
39.	Olive-N & S	N-23	1823	12.2
40.	Coalwood-North	N-23	1824	8.3
41.	Coalwood-South	N-23	1824	8.02
42.	Epsie-E & W	N-37	2149	11
43.	Epsie-East	N-37	4056	7.8
44.	Main St.-Lavina	N-53	3924	0.33
45.	Jordan-East	N-57	2025	8
46.	Lewistown-West	N-57	4066	9
47.	Hobson-East	N-57	4368	12.26
48.	Bohemian Corner-South	N-61	1743	11.87
49.	Sioux Pass-South	N-62	1041	5.75
50.	NW of Sidney-North	N-62	1041	9.76
51.	Harlowton-North	N-63	4072	6.82
52.	Judith Gap-N & S	N-63	4073	4.71
53.	Four Corners-North	N-85	4306	6.09
54.	6.84 mi N of Malta-North	N-99	4055	10.8

Individual NI-NHS Routes

Figure NHS-2 (see page 10) illustrates the Existing and E+C Network CIs by individual route.

District Comparisons

Figure NHS-3 (see page 11) compares the total NI-NHS mileage in each of the Financial Districts.

Figures NHS-4 through **NHS-8** (see page 11) compare the overall NI-NHS CIs in each of the Financial Districts.

Figures NHS-9 through **NHS-11** (see pages 12-14) are maps which illustrate CIs on the existing highway network for the entire NI-NHS system for the years 2001 through 2021, in ten-year increments.

Hot Spots

Figures NHS-12 and **NHS-13** (see page 15) have been developed to better illustrate segments of the Non-Interstate NHS that currently have, or are projected to have, service levels less than C. Only the 2001 and 2021 maps for the Existing Highway network are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures NHS-14 and **NHS-15** (see page 16) compare the total number of miles of NI-NHS in each District against the numbers of miles of NI-NHS operating below a CI of 55 (less than LOS C).

Missing Route Data

Due to the unavailability of inventory data on N-34 (15.399), it could not be analyzed. It should be understood that the CI for this route was therefore not considered in the analysis either at the statewide or district (#4) level. The analysis for this route will be included as soon as inventory data becomes available.

Rural Non-Interstate National Highway System

Individual Routes

Congestion Indices

Figure NHS-2

Route Name	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
N-1	78	78	78	79	77	77	75	75	73	74	71	72
N-3	60	59	59	93	55	83	52	92	48	92	44	91
N-4	77	77	77	78	76	77	75	75	74	73	72	73
N-5	52	53	55	58	50	54	48	50	48	46	38	42
N-7	63	68	63	85	61	83	59	82	56	81	54	79
N-8	69	69	71	75	67	72	64	69	60	66	57	63
N-10	82	82	83		82		61		60		78	
N-11	76	76	79		76		73		69		66	
N-12	77	45	44		48		32		27		25	
N-14	81	82	82	83	80	81	79	79	76	77	74	75
N-16	73	70	69		66		63		60		57	
N-20	80	75	76	77	75	76	74	74	72	73	71	72
N-22	85	84	85		84		83		83		82	
N-23	86	85	81	83	80	82	80	81	79	81	78	80
N-24	66	66	66		64		62		60		58	
N-34												
N-37	77	73	76	76	75	75	73	74	72	73	71	71
N-38	41	40	40		37		32		28		6	
N-50	54	54	52		47		43		35		29	
N-53	84	85	86		85		83		81		79	
N-57	84	84	84	84	83	84	82	83	82	82	81	81
N-60	58	61	61		58		56		53		51	
N-61	83	84	84	84	83	83	82	82	81	81	79	79
N-62	86	88	86	87	85	86	85	86	84	86	83	85
N-63	74	74	76	76	75	75	73	74	72	72	70	70
N-85	53	56	57		52		46		40		35	
N-88	76	75	78		77		77		76		75	
N-92												
N-93	55	53	55		52		50		48		45	
N-99	96	96	96	97	96	97	96	96	96	96	96	96
N-101												
N-102												
N-103												
N-104												
N-105												

Those CI's in red reflect congestion indices of LOS D or lower (CI <55)

Routes in blue represent those routes of which portions are on both the NI-NHS and the Primary system. Only the CIs for the NI-NHS segments are reflected in this table.

[1]Traffic Year

[2]Existing Highway Network

[3]Existing plus Committed Highway Network

No capacity enhancing projects planned for this route.

NI-NHS routes located in urban areas only; no CI's were computed.

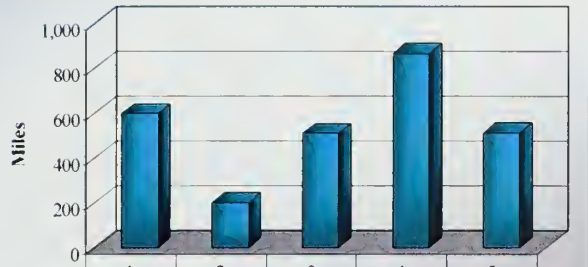
Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried

Route has been realigned **or** assigned a new route number not compatable with CoMS. Unable to compute a CI

Rural Non-Interstate NHS

District Mileage Comparison
Non-Interstate NHS

Figure NHS-3



	1	2	3	4	5
Total NI-NHS Miles	598	200	509	865	512

Current

District Comparison
Non-Interstate NHS
2001 Congestion Indices

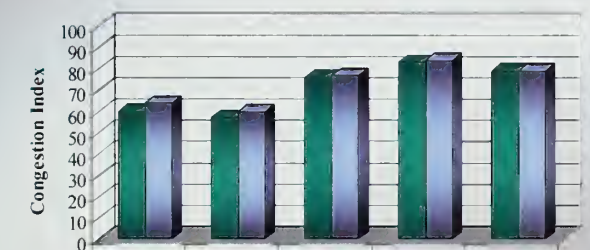
Figure NHS-4

	1	2	3	4	5
Existing	63	62	77	80	80
E + C	67	67	78	84	84

Projected 5 Year

District Comparison
Non-Interstate NHS
2006 Congestion Indices

Figure NHS-5

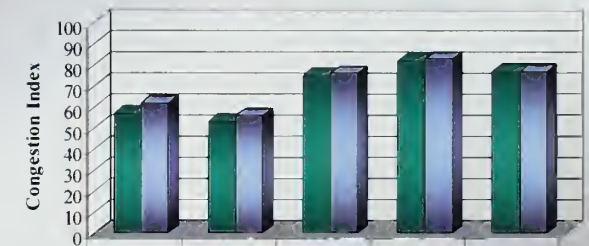


	1	2	3	4	5
Existing	60	57	76	83	79
E + C	64	60	77	84	79

Projected 10 Year

District Comparison
Non-Interstate NHS
2011 Congestion Indices

Figure NHS-6

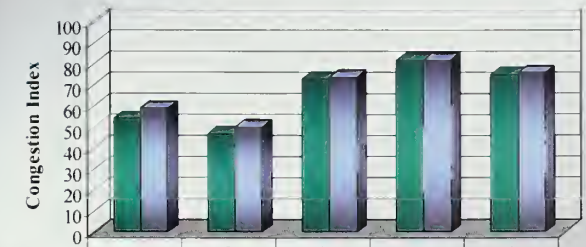


	1	2	3	4	5
Existing	57	53	75	82	77
E + C	62	56	76	83	77

Projected 15 Year

District Comparison
Non-Interstate NHS
2016 Congestion Indices

Figure NHS-7

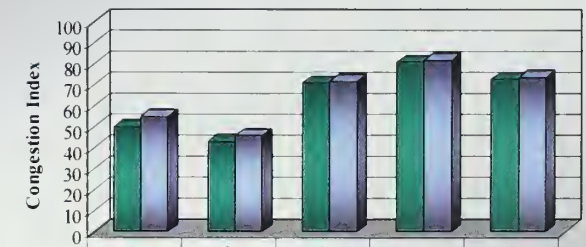


	1	2	3	4	5
Existing	54	47	73	82	75
E + C	59	50	74	82	76

Projected 20 Year

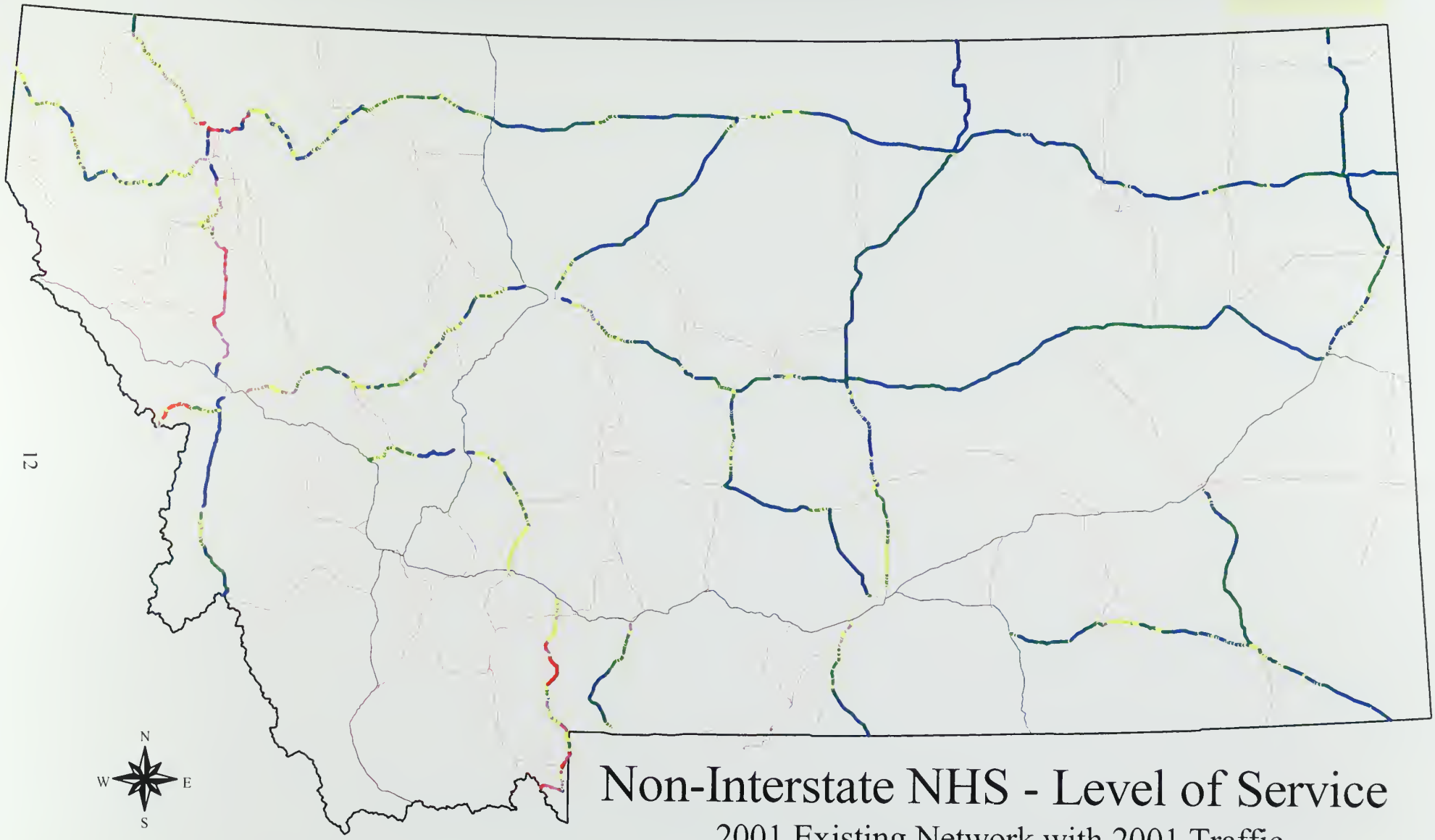
District Comparison
Non-Interstate NHS
2021 Congestion Indices

Figure NHS-8



	1	2	3	4	5
Existing	50	43	71	81	73
E + C	55	46	72	82	74

Figure NHS-9



Non-Interstate NHS - Level of Service

2001 Existing Network with 2001 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

MDT serving you with pride

Data and Statistics Bureau

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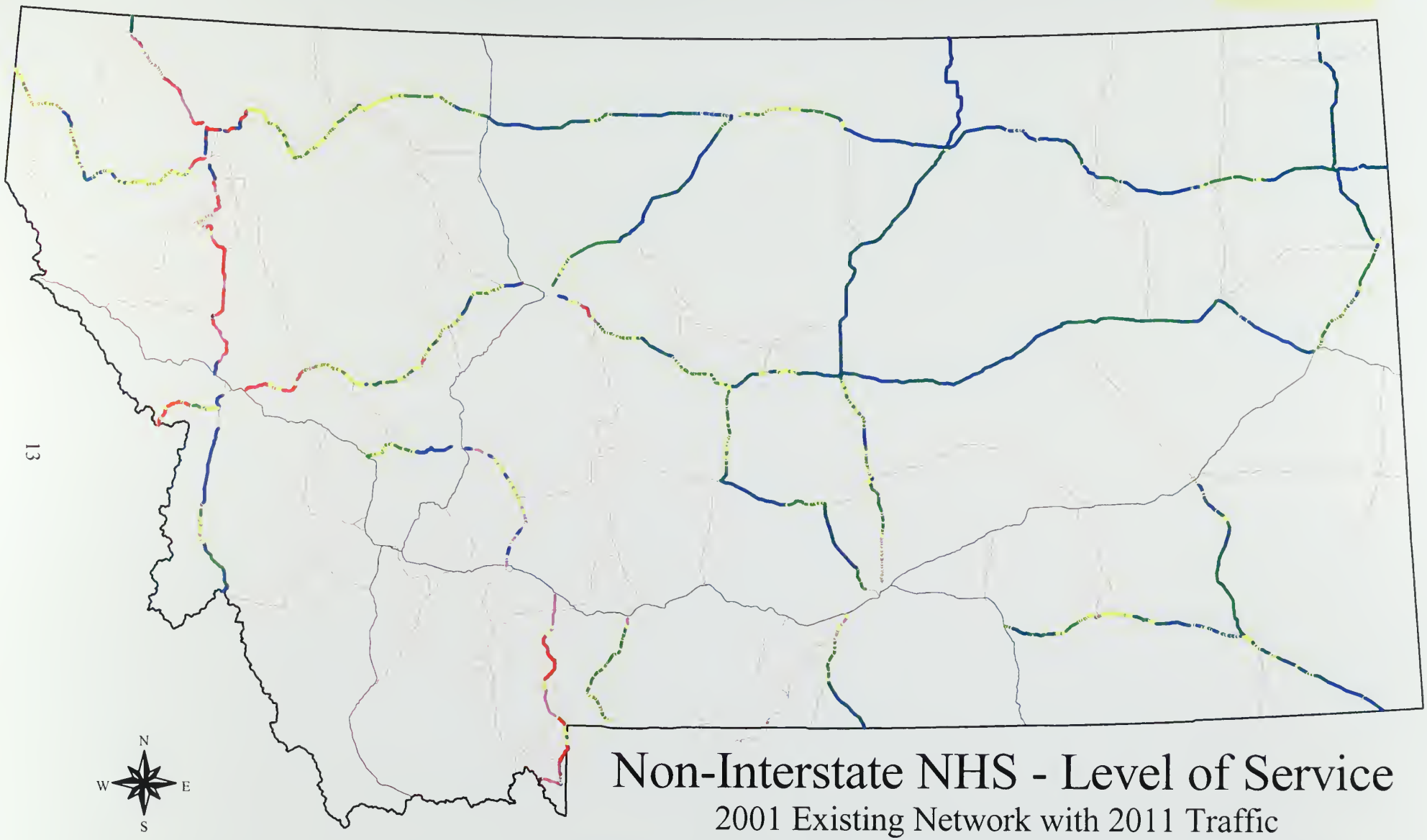
Figure NHS-10



Non-Interstate NHS - Level of Service

2001 Existing Network with 2011 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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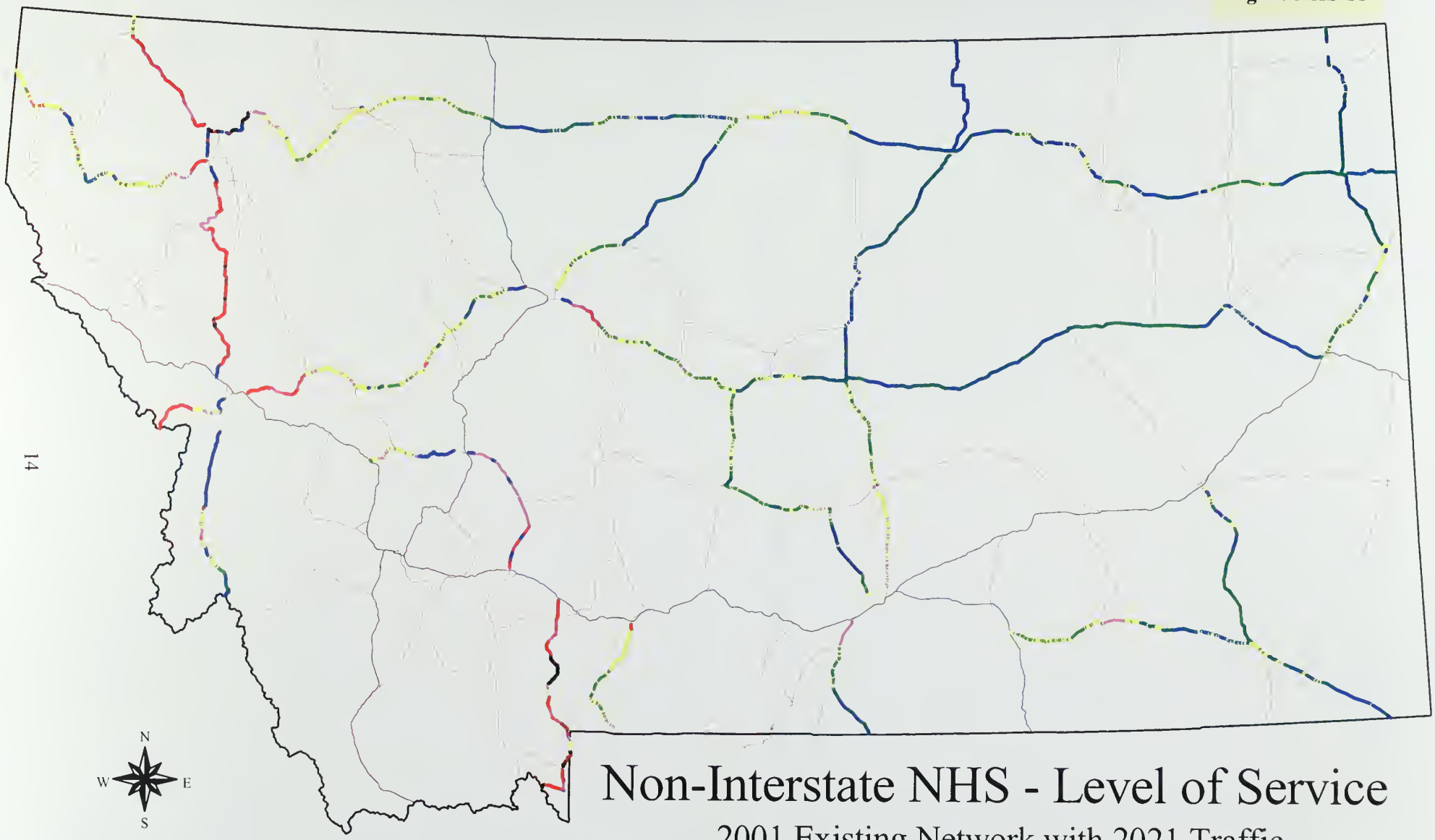
Figure NHS-11



Non-Interstate NHS - Level of Service

2001 Existing Network with 2021 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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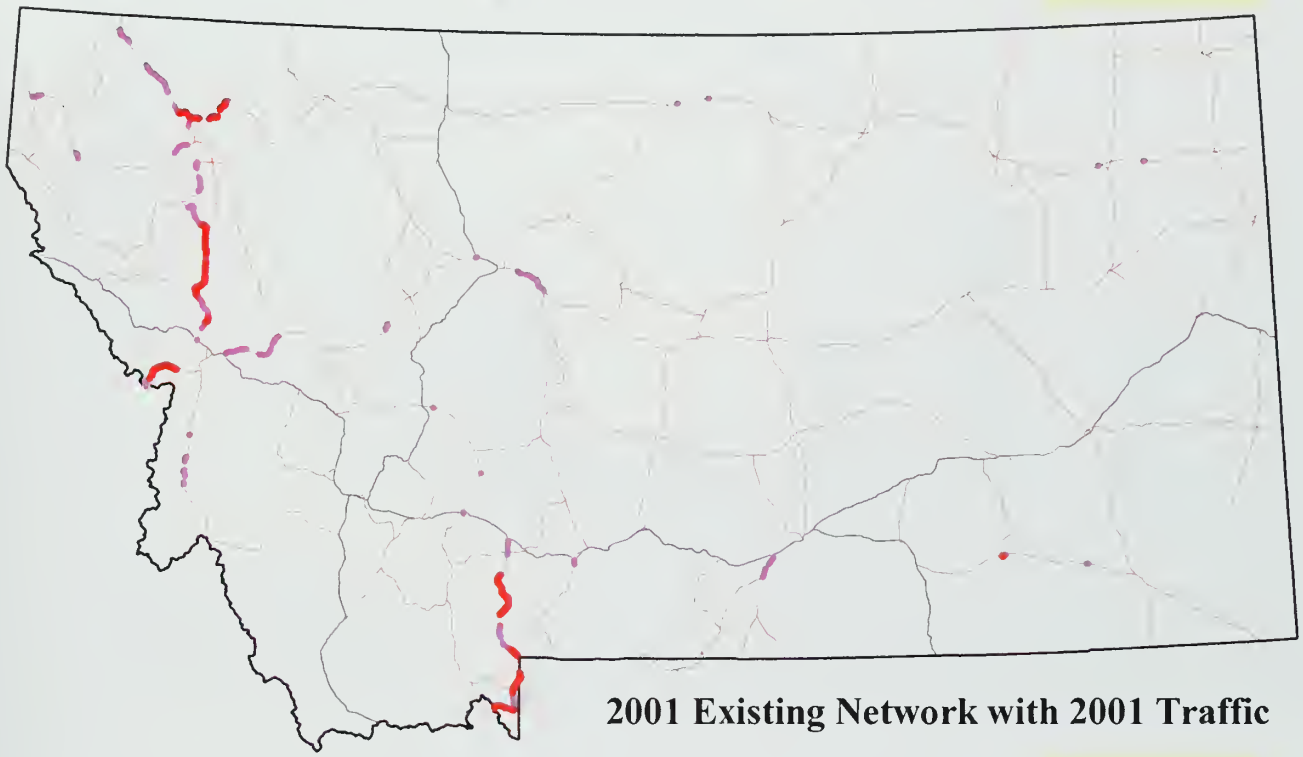
Non-Interstate NHS Level of Service "Hot Spots"

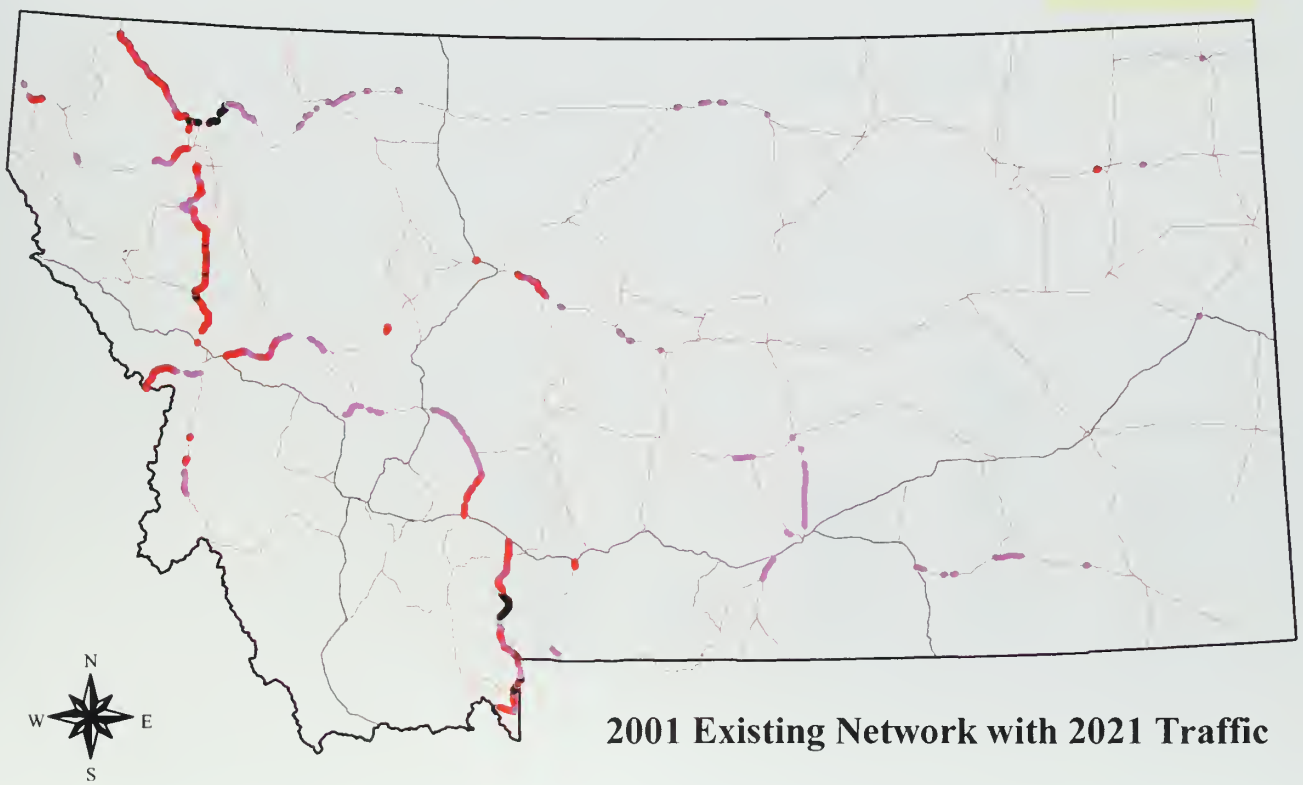
(Congestion Index < 55 - LOS D or Lower)

Figure NHS-12



2001 Existing Network with 2001 Traffic

Figure NHS-13



2001 Existing Network with 2021 Traffic

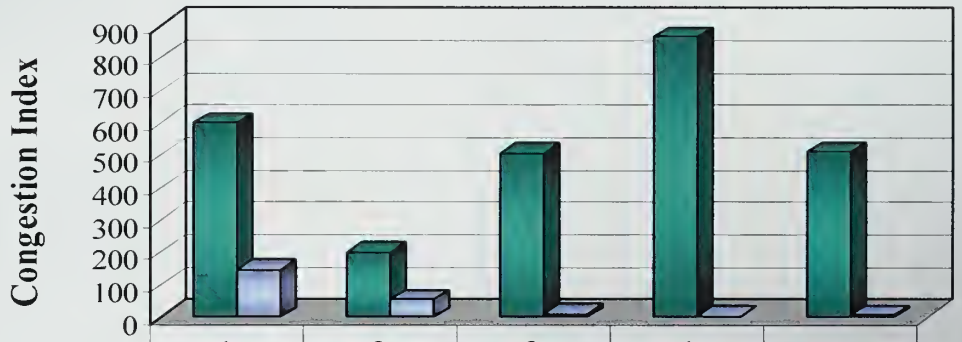
- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

2001 District Comparison "Hotspots"

Figure NHS-14

Non-Interstate NHS

Congestion Index < 55 (LOS D or lower)



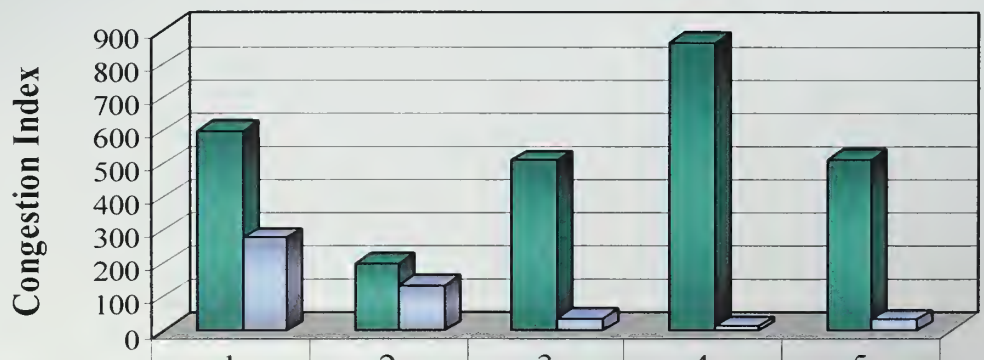
	1	2	3	4	5
Total NI-NHS Miles	598	200	509	865	512
Miles of CI < 55	146	56	11	3	5

2021 District Comparison "Hotspots"

Figure NHS-15

Non-Interstate NHS

Congestion Index < 55 (LOS D or lower)



	1	2	3	4	5
Total NI-NHS Miles	598	200	509	865	512
Miles of CI < 55	278	135	37	12	32

Rural Primary System

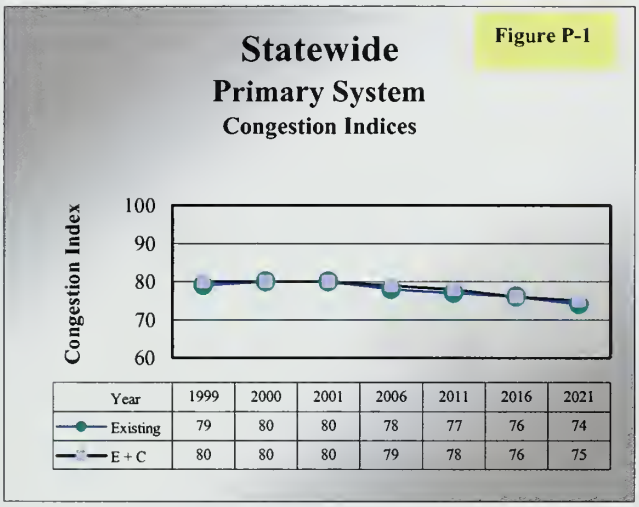
General Information

The following analysis reflects only the rural portions of the Primary System.

Existing Network

As illustrated in **Figure P-1**, the overall, statewide, existing network CI is currently 80 (LOS B) and will not fall below a CI of 74 (LOS B) within the next 20 years. The CI has remained fairly constant from 1996 to 2001.

Figure P-1



Year	1999	2000	2001	2006	2011	2016	2021
Existing	79	80	80	78	77	76	74
E+C	80	80	80	79	78	76	75

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The routes with projects that have been let but have not yet been re-inventoried, due to lack of current images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	Miles City-East	P-2	2022	6.7
2.	Dupuyer-North	P-3	1299	8.65
3.	11.81 mi NW of Glacier Co. Line-NW	P-3	4046	9.16
4.	Dixon-West	P-6	0891	9.8
5.	Weeksville-West	P-6	2014	6.7
6.	Bowman's Corner-Augusta	P-9	4048	17.7
7.	Cameron-N & S	P-13	1286	11.2
8.	Sappington Jct.-South	P-13	3833	1.70
9.	11.81 mi E of Roundup-E.	P-14	1302	7.6
10.	Musselshell-E & W	P-14	1302	6.7
11.	East of Townsend	P-14	1510	4.8
12.	Melstone-E & W	P-14	2152	10.6
13.	Forsyth-NW	P-14	4059	11.8
14.	Angela-N & S	P-18	2461	13.34
15.	Rock Springs-N & S	P-18	2461	11.6
16.	Maxville-Drummond	P-19	1280	14.27
17.	JCT I-15-Conrad	P-21	4050	2.8
18.	Flaxville-E & W	P-22	2023	7.2
19.	Plentywood-West	P-22	1393	11.2
20.	Baker-South	P-27	4052	11.9
21.	Silver Star-N & S	P-29	1022	7
22.	Twin Bridges-North	P-29	2018	6.21
23.	Colstrip-South	P-39	2148	9.01
24.	Valier-West	P-44	1291	14.3
25.	8.08 mi. N of Big Timber	P-45	1300	9.2
26.	Sportsman's Campground-E.	P-46	2137	6.2
27.	Dickey Bridge-Wise River	P-46	2137	7.7
28.	Hardin-North	P-48	4064	10.4
29.	Dillon-NE	P-49	1811	1.83
30.	Sidney-West	P-51	2151	11.73
31.	Polson-East	P-52	4036	2.8
32.	Whitehall St.-Whitehall	P-55	3877	0.57
33.	Bull Lake-South	P-56	1397	16.5
34.	Ringling-North	P-59	1513	7.8
35.	Ringling-N & S	P-59	3878	11.5
36.	Main St.-Boulder	P-69	3879	0.62
37.	Belfry-North	P-72	1016	10.96
38.	Wyoming Line-Belfry	P-72	4065	10.54
39.	Absarokee-N & S	P-78	920	7.2
40.	Columbus-South	P-78	920	8.8
41.	Woodward Ave.-Absarokee	P-78	4380	0.58
42.	Somers-East	P-82	3862	4.62
43.	Clearwater JCT-North	P-83	1233	13.1
44.	Four Corners-West	P-84	1831	3.72
45.	Madison River-East	P-84	1832	9.9
46.	Dillon-No. Montana St.	P-89	1809	0.73

Individual Primary Routes

Figure P-2 (see pages 19-20) illustrates the Existing and E+C network CIs by individual route.

District Comparisons

Figure P-3 (see page 21) compares the total Primary mileage in each of the Financial Districts.

Figures P-4 through **P-8** (see page 21) compare the overall Primary System CIs in each of the Financial Districts.

Figures P-9 through **P-11** (see pages 22-24) are maps which illustrate CIs on the Existing Highway network for the entire Primary

system for the years 2001 through 2021 in ten-year increments.

Hot Spots

Figures P-12 and **P-13** (see page 25) have been developed to better illustrate segments of the Primary System that currently have or are projected to have service levels of less than C. Only the 2001 and 2021 maps for the Existing Highway networks are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures P-14 and **P-15** (see page 26) compare the total number of miles of Primary in each district against the number of miles of Primary operating below a CI of 55 (less than LOS C).

Missing Route Data

Due to the unavailability of inventory data on P-48 (31.447 miles) and P-97 (.345 miles), these routes could not be analyzed. It should be understood that the CI for these routes was therefore not considered in the analysis either at the statewide or district level. The analysis for these routes will be included as soon as inventory data becomes available.

Rural Primary System

Individual Routes

Congestion Indices

Figure P-2

Route Name	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
P-1	95	95	94		93		92		91		89	
P-2	88	87	87	87	87	87	86	87	86	86	86	86
P-3	80	79	79	79	78	78	77	77	76	77	75	76
P-4	65	60	65		63		61		59		57	
P-6	73	74	75	75	72	73	69	70	65	66	62	62
P-7												
P-8	68	68	68		65		62		58		54	
P-9	87	88	87	87	86	87	86	87	86	86	86	86
P-10												
P-11	74	74	75		73		72		70		68	
P-13	69	69	69	70	66	67	63	63	59	60	56	56
P-14	85	84	85	85	84	84	83	83	82	83	81	82
P-17	88	87	88		88		87		87		87	
P-18	90	90	91	92	91	91	90	91	90	90	89	90
P-19	73	71	73	74	72	73	71	72	70	71	69	70
P-20	82	80	84		84		83		82		81	
P-21	77	78	79	81	79	80	78	80	78	79	77	78
P-22	84	85	84	86	84	85	83	85	83	84	82	84
P-23												
P-25	89	89	89		89		89		88		88	
P-26	89	89	86		85		85		84		83	
P-27	84	82	84	84	83	84	83	83	82	83	82	82
P-28	70	77	76		74		73		72		70	
P-29	71	71	70	72	69	71	67	69	65	68	64	66
P-30	82	83	84		84		83		83		82	
P-31	91	90	91		91		91		90		90	
P-32	89	91	89		89		89		88		88	
P-33	65	65	66		63		60		57		53	
P-35	72	75	76		73		71		68		64	
P-36	78	77	79		78		76		74		72	
P-39	84	84	78	79	78	78	77	77	76	77	75	76
P-41	79	79	78		76		74		72		70	
P-42	90	90	91		91		90		90		90	
P-43	87	87	88		87		87		86		86	
P-44	85	85	85	85	84	85	84	84	83	84	83	83
P-45	87	86	84	85	83	84	83	84	82	83	82	83
P-46	85	86	85	86	84	85	83	83	81	82	80	80
P-47	86	83	84		83		82		82		81	
P-48	87	87	Images not available									
P-49	73	72	71	71	70	70	68	69	67	67	66	66
P-50	92	92	91		90		90		89		87	
P-51	92	91	91	91	91	91	90	90	90	90	89	90
P-52	45	42	44	44	41	41	38	38	35	35	29	29
P-54	90	90	88		87		87		87		86	
P-55	75	77	74	74	72	72	69	69	67	67	64	64

Rural Primary System

Individual Routes

Congestion Indices

Route Name	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
P-56	70	71	76	70	71	71	69	70	69	68	66	66
P-57	87	89	83		73		82		81		80	
P-58	66	66	80		87		68		63		62	
P-59	89	89	90	91	90	90	88	90	88	89	87	88
P-60	81	82	80		68		63		68		83	
P-65	70	51	39		90		32		87		0	
P-66	89	51	84		68		82		81		80	
P-67	72	72	73		73		72		68		70	
P-68	70	72	76		77		78		68		73	
P-69	70	89	80	80	78	78	78	76	73	74	71	71
P-72	75	72	76	79	73	79	78	76	68	42	64	70
P-75	71	72	76		75		75		73		73	
P-78	66	66	67	80	68	66	59	62	55	58	52	54
P-80	66	66	80		68		68		68		87	
P-81	66	66	80		87		87		87		87	
P-82	54	87	52	58	77	51	73	76	32	42	35	38
P-83	54	66	83	55	51	53	51	51	46	48	44	44
P-84	70	89	67	79	63	66	68	63	55	59	51	54
P-86	70	66	76		68		68		63		62	
P-87	70	73	67		73		68		53		48	
P-89	65	64	62	63	60	62	59	60	57	58	55	56
P-91	64	63	66		64		63		62		61	
P-95	77	77	75		75		74		74		73	
P-96	73	74	74		74		73		72		71	
P-97	Images not available											
P-98	92	93	94		93		93		93		93	

CI's in red reflect congestion indices of LOS D or lower (CI <55)

Routes in blue represent those routes of which portions are on both NI-NHS and the Primary system. Only the CIs for the Primary segments are reflected in this table.

[1]Traffic Year

[2]Existing Highway Network

[3]Existing plus Committed Highway Network

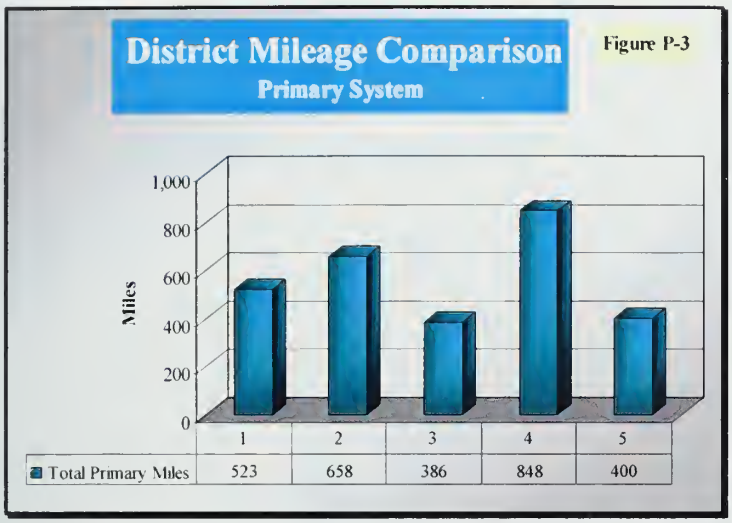
No capacity enhancing projects planned for this route

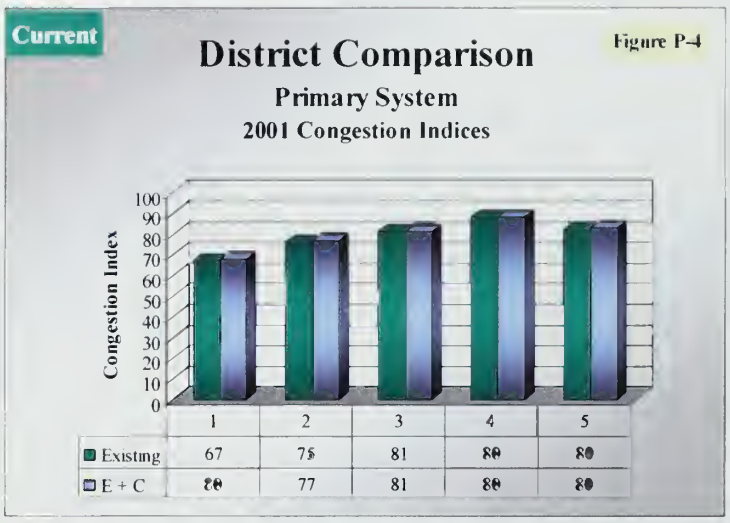
Primary routes located in urban areas; no CI's were computed

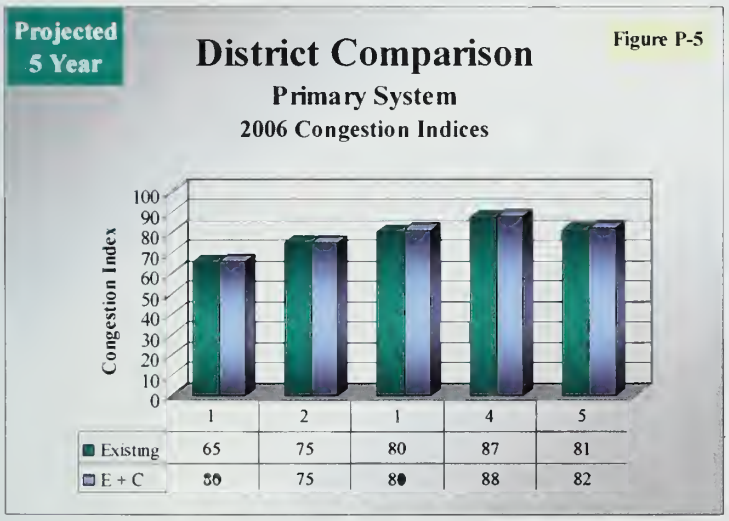
No general inventory data available; no CI's were computed

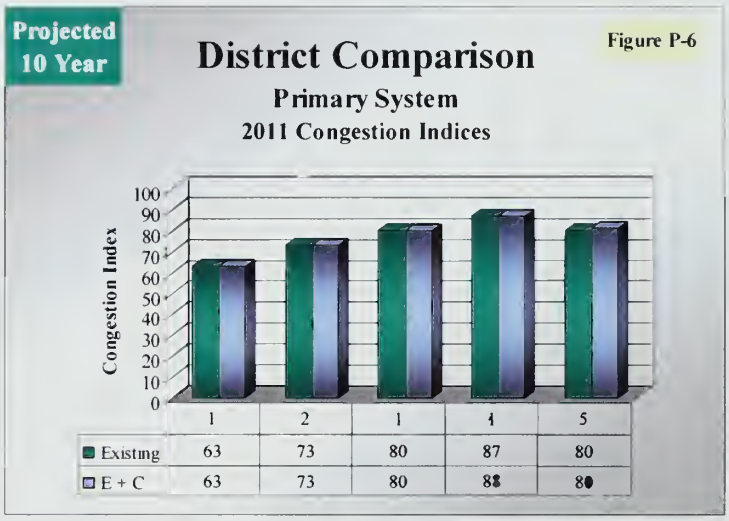
Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried.

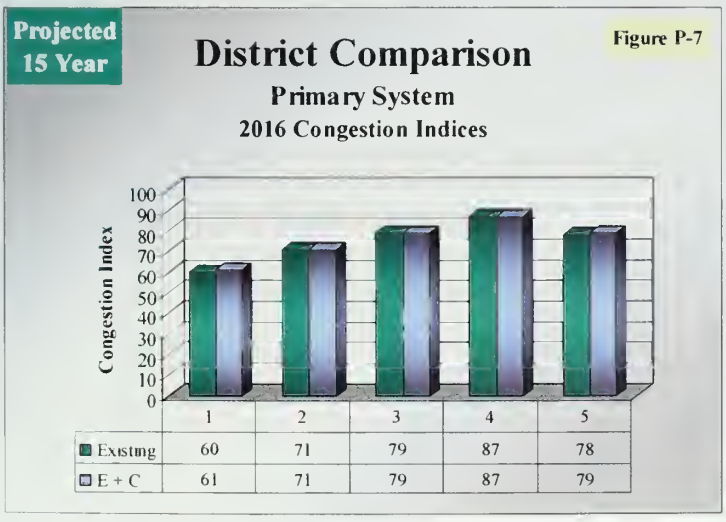
Rural Primary











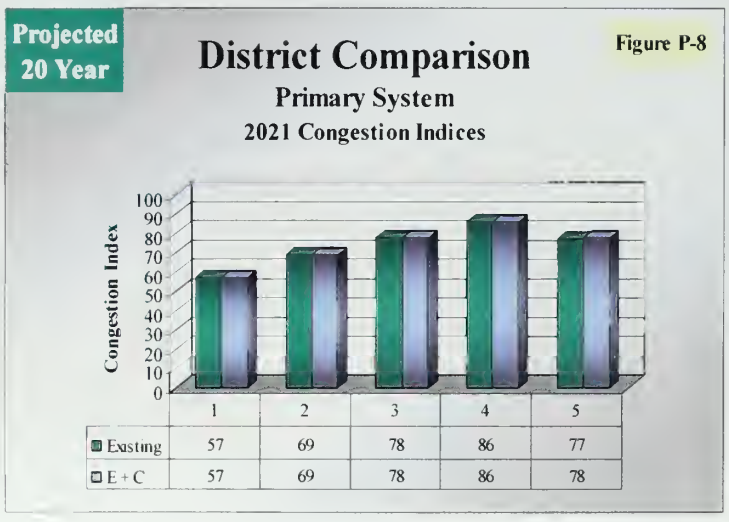
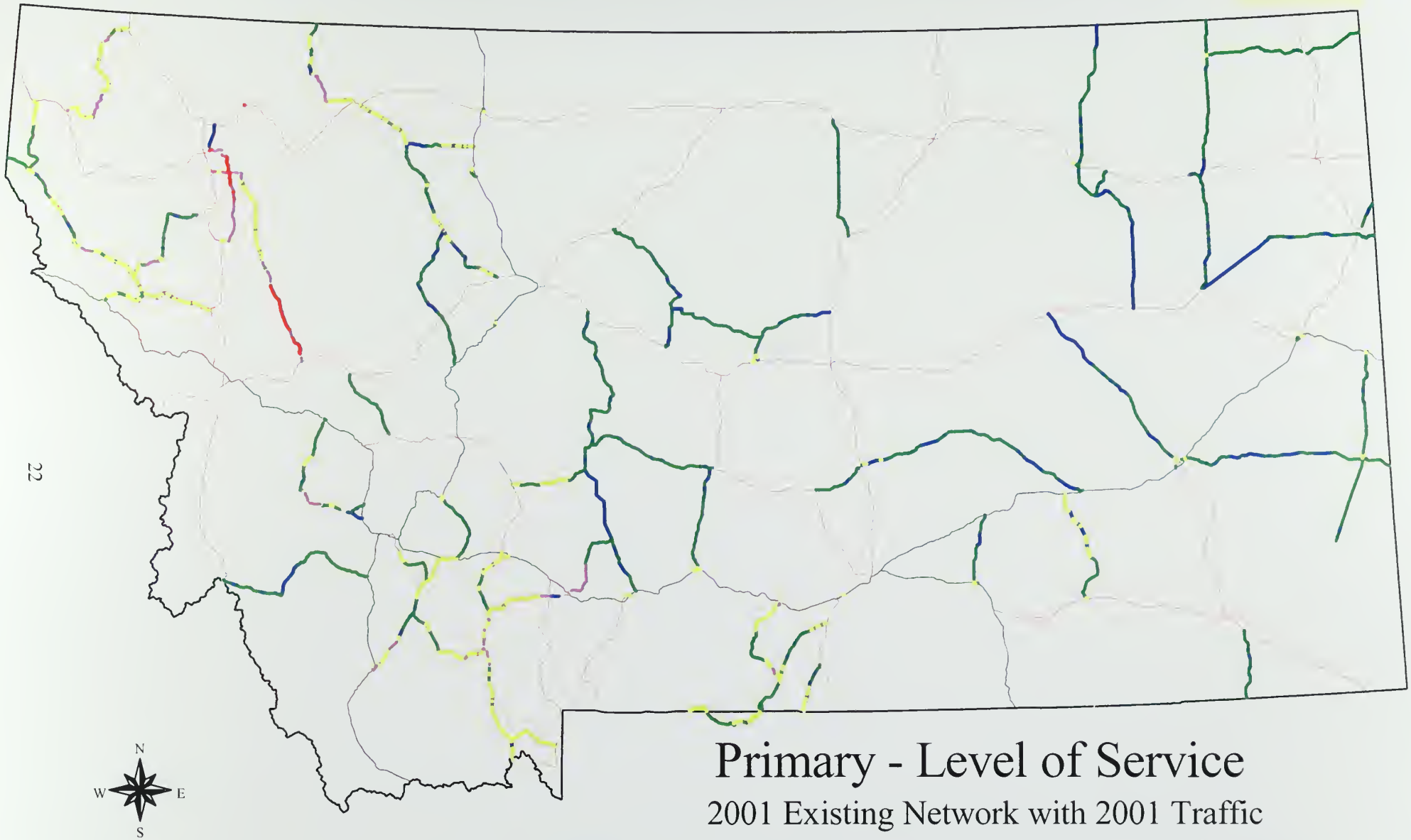


Figure P-9



Primary - Level of Service

2001 Existing Network with 2001 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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W E
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MDT serving you with pride

Data and Statistics Bureau

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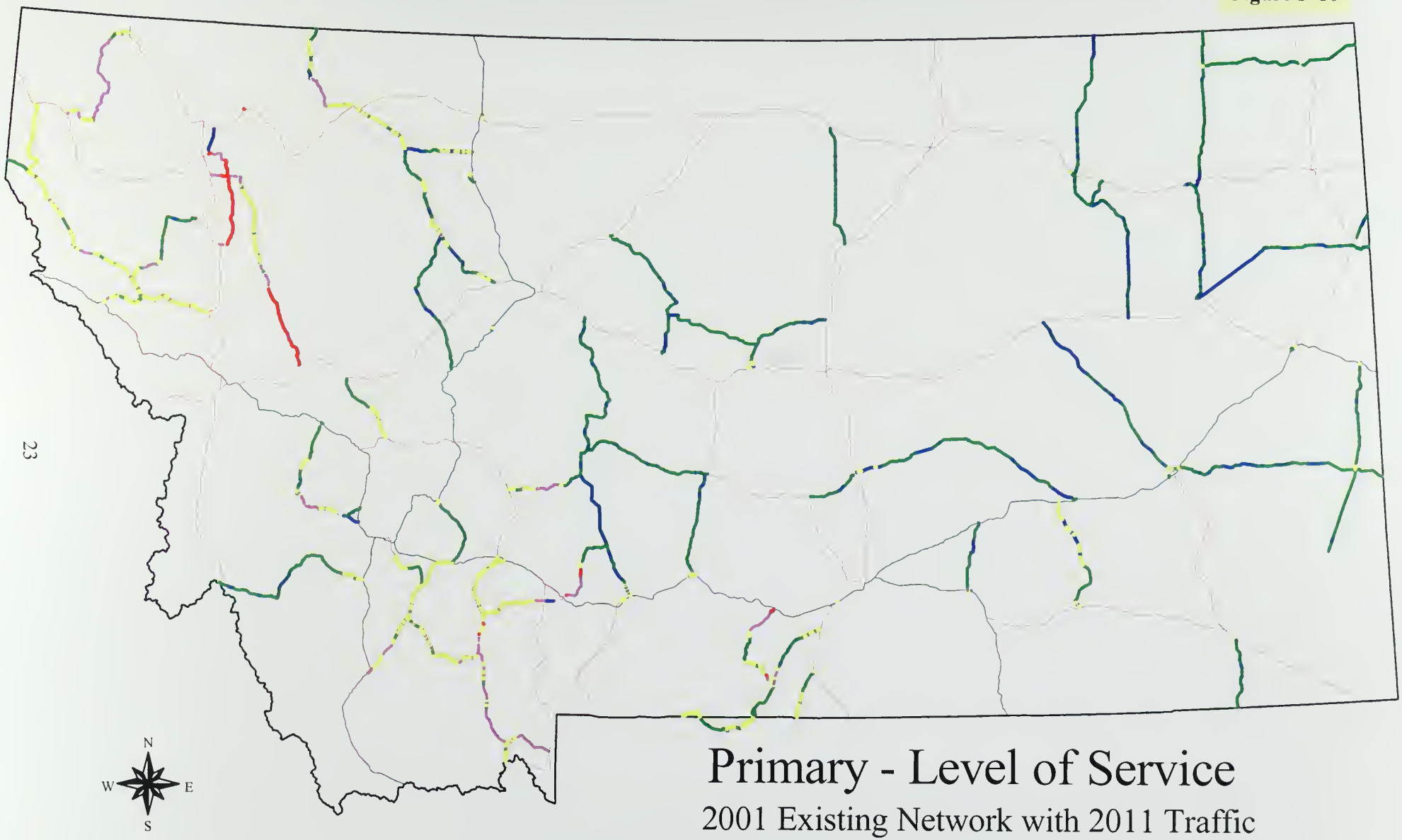
Figure P-10



Primary - Level of Service

2001 Existing Network with 2011 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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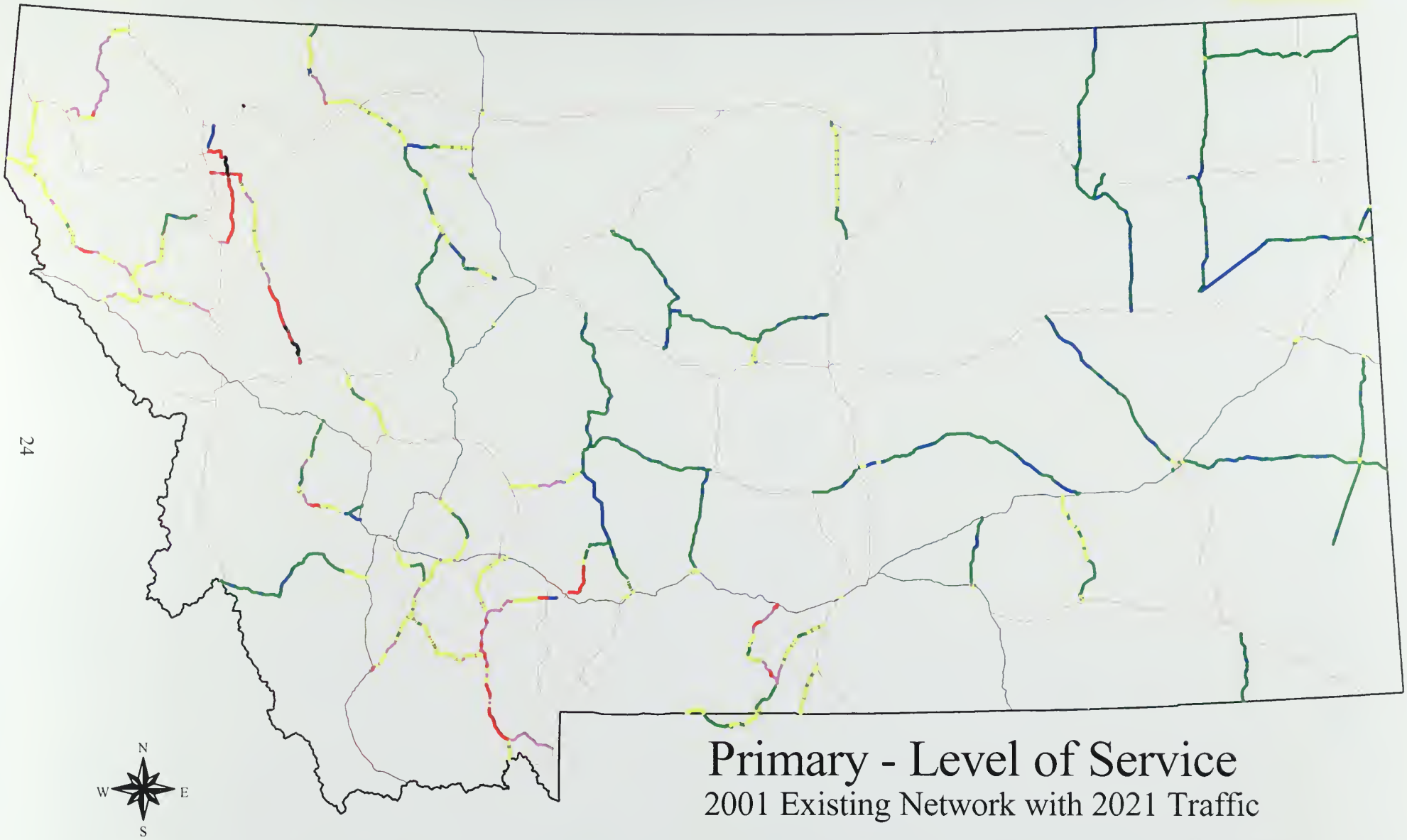
Figure P-11



Primary - Level of Service

2001 Existing Network with 2021 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

Data and Statistics Bureau

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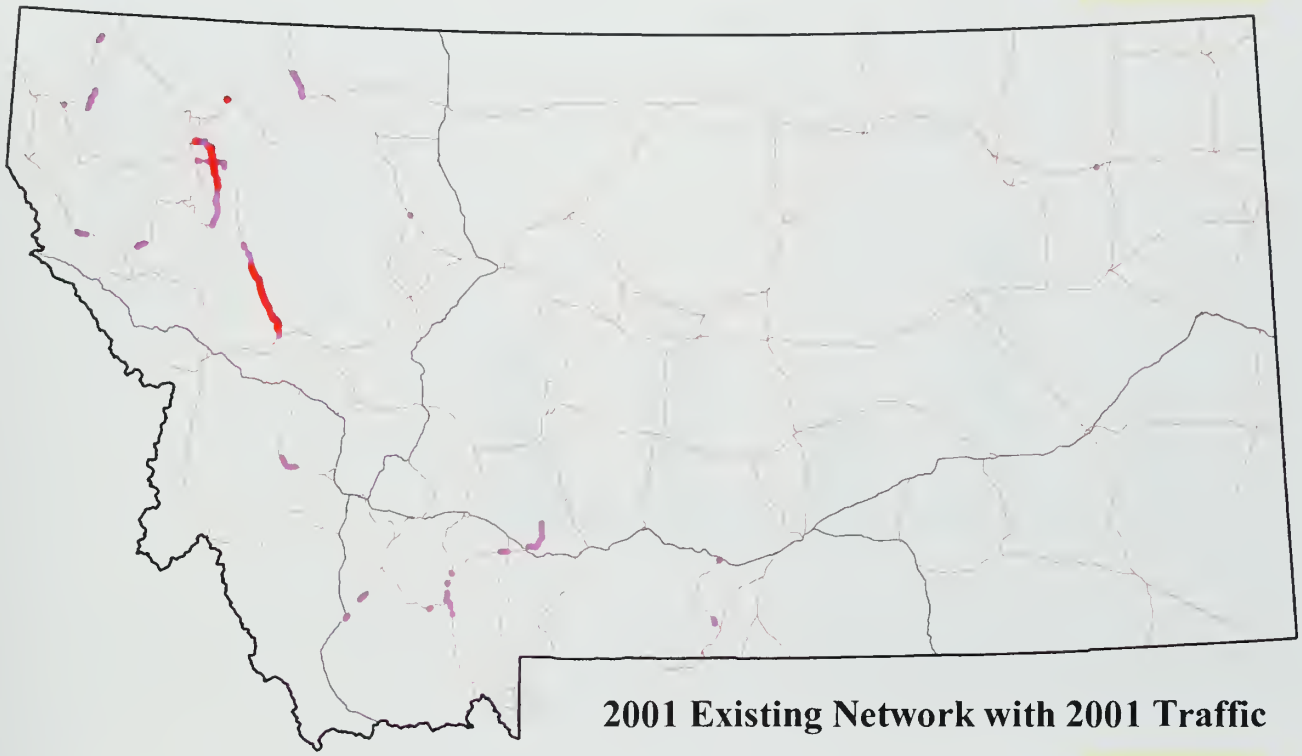
Primary
Level of Service "Hot Spots"

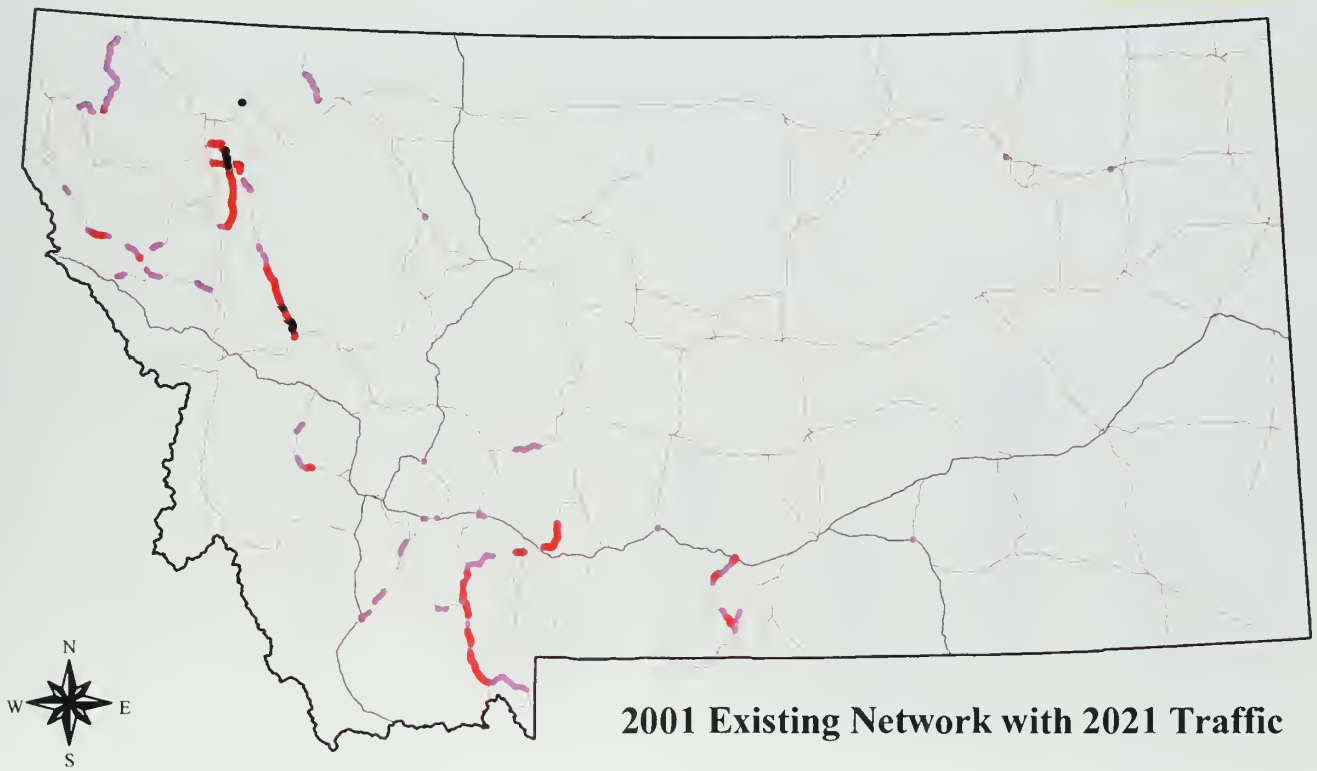
(Congestion Index < 55 - LOS D or Lower)

Figure P-12



2001 Existing Network with 2001 Traffic

Figure P-13



2001 Existing Network with 2021 Traffic

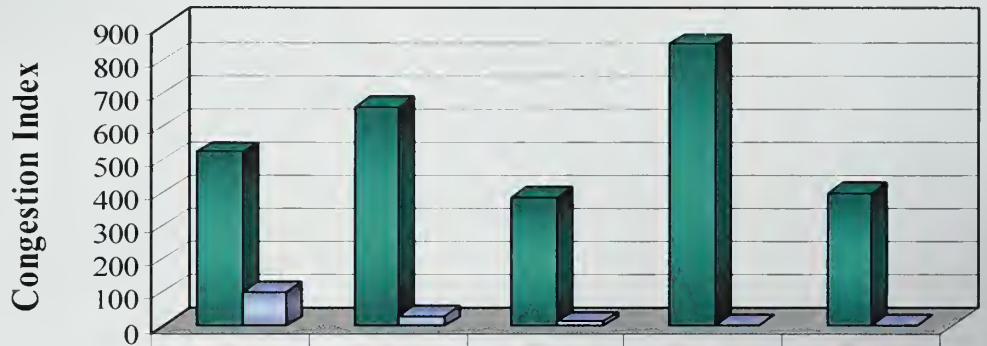
- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

2001 District Comparison "Hotspots"

Figure P-14

Primary System

Congestion Index < 55 (LOS D or lower)



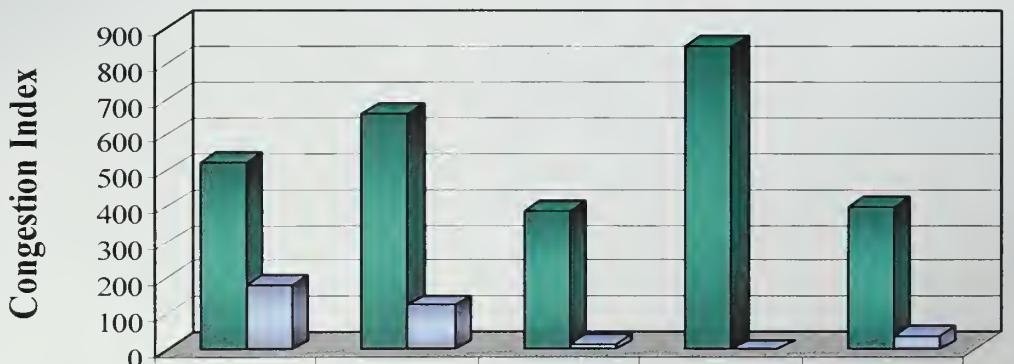
	1	2	3	4	5
Total Primary Miles	523	658	386	848	400
Miles of CI < 55	102	30	13	0	3

2021 District Comparison "Hotspots"

Figure P-15

Primary System

Congestion Index < 55 (LOS D or lower)



	1	2	3	4	5
Total Primary Miles	523	658	386	848	400
Miles of CI < 55	182	124	15	0	38

Secondary System

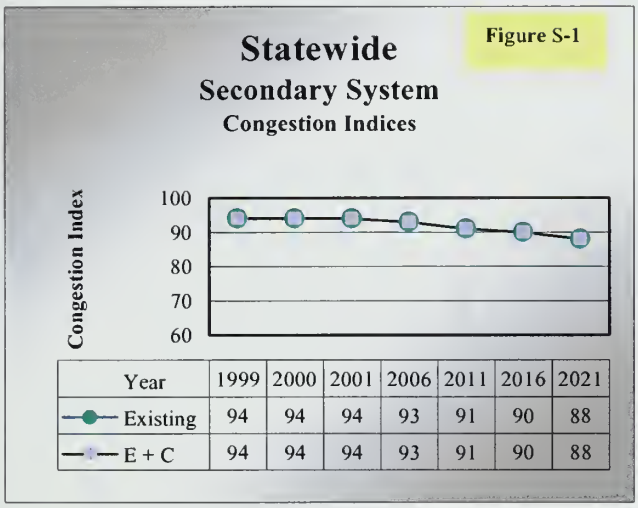
General Information

As stated in MDT Systems Action Policy, a Secondary route cannot pass through or enter an urban area. Therefore, all Secondary routes are considered rural in nature and were analyzed as such.

Existing Network

As illustrated in **Figure S-1**, the overall, statewide existing network CI is currently 94 (LOS A) and will not fall below a CI of 88 (LOS A) within the next 20 years.

Figure S-1



Year	1999	2000	2001	2006	2011	2016	2021
Existing	94	94	94	93	91	90	88
E + C	94	94	94	93	91	90	88

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The routes with projects that have been let but have not yet been re-inventoried due to lack of current images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	Safety Improvement-E of Manhattan	S-205	4437	0.8
2.	Conrad-SW	S-219	2945	3.4
3.	24.86 mi N of Havre-South	S-233	4479	9.07
4.	8.7 mi S of Havre-South	S-234	2837	19.9
5.	Jct. MT 85-East	S-235	4470	4.2
6.	Hobson-Utica	S-239	4485	11.67
7.	22.99 mi NW of Terry-North	S-253	2824	13.6
8.	8.7 mi N of Wibaux-North	S-261	2840	4.53
9.	Richland County Line-North	S-261	4482	2.78
10.	Powell Co. Line-North	S-271	4468	10.6
11.	Rocker Interchange-North	S-276	4473	1.2
12	Brown's Gulch Road	S-276	2820	2.42
13	3.73 mi S of Big Timber-South	S-298	1151	4.29
14.	Musselshell Co. Line-NW	S-310	2974	7.3
15.	24.86 mi S of Ekalaka-South	S-323	4138	12
16.	Grant-West	S-324	4476	8.7
17	Ulm-South	S-330	0296	7.8
18.	4.97 mi S of Polson-South	S-354	3606	7.19
19	Whitetail Road	S-399	2827	10.13
20.	Canyon Ferry Road	S-430	4480	8.18
21.	1.24 mi N of Jct. MT 200-North	S-472	4467	6.8
22.	Blue Slide Road	S-472	2976	2.3
23	Foy's Canyon Road	S-503	0733	3.78
24.	East River Road-S of Emigrant	S-540	3885	4

Individual Secondary Routes

Figure S-2 (see pages 29-34) illustrates the Existing and E+C network CIs by individual route.

District Comparisons

Figure S-3 (see page 35) compares the total Secondary mileage in each of the Financial Districts.

Figures S-4 through **S-8** (see page 35) compare the overall Secondary System CIs in each of the districts.

Figure S-9 through **S-11** (see pages 36-38) are maps which illustrate CIs on the existing highway network for the entire Secondary System for the years 2001 through 2021 in ten year increments.

Hot Spots

Figures S-12 and **S-13** (see page 39) have been developed to better illustrate segments of the Secondary System that currently have, or are projected to have, service levels of less than C. Only the 2001 and 2021 maps for the existing highway networks are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures S-14 and **S-15** (see page 40) compare the total number of miles of Secondary in each district against the number

of miles of Secondary operating below a CI of 55 (less than LOS C).

Missing Data Report

Due to the unavailability of inventory data, some of the routes on the Secondary System could not be analyzed. It should be understood that the CIs for these routes were not considered in the analysis either at the statewide or district level. Every attempt will be made to gather the data and include the analysis for these routes in the 2005 CoMS report.

The routes which were not available for this report are as follows:

Route	Length	Route	Length	Route	Length
S-236	89.6	S-416	13.4	S-570	.2
S-292	9.4	S-418	15.9	S-571	1.2
S-313	38.6	S-567	35.7	S-572	1.8
S-398	7.8	S-569	22.2	S-573	14.9

Secondary System

Individual Routes

Congestion Indices

Figure S-2

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-201	93	93	93		93		92		92		92	
S-202	89	93	97		88		88		93		86	
S-203	89	72	71		88		65		93		58	
S-204			98		88		88		98		98	
S-205	88	72	72	73	80	71	88	66	93	66	64	64
S-206	64	92	64		80		57		53		50	
S-207	88	99	98		88		88		98		97	
S-208	88	91	91		88		88		98		96	
S-209	88	64	63		80		57		55		53	
S-210	88	66	91		83		88		78		76	
S-211	89	72	72		76		76		73		72	
S-212	88	97	97		82		80		73		76	
S-213	80	99	91		90		80		93		88	
S-214	93	93	93		93		92		92		92	
S-215	88	91	90		80		88		93		89	
S-217	88	99	99		88		88		98		98	
S-218	95	91	91		88		88		93		93	
S-219	94	94	93	93	93	93	92	92	92	92	91	91
S-220	92	92	91		80		88		98		86	
S-221	80	92	97		88		95		93		83	
S-222	77	77	77		76		75		73		71	
S-223	92	91	92		92		88		93		91	
S-224	88	93	93		88		95		95		95	
S-225	95	95	95		95		95		93		94	
S-226	88	91	91		92		92		93		91	
S-227	88	97	97		88		95		93		83	
S-228	92	92	92		92		88		90		89	
S-229	73	66	66		88		62		59		57	
S-231	88	91	91		88		80		93		53	
S-232	94	92	91		91		80		90		89	
S-233	88	97	97	97	88	97	88	97	93	96	96	96
S-234	88	97	96	86	88	86	95	85	95	85	84	85
S-235	88	82	79	83	77	81	75	80	73	78	71	76
S-236	Images not available											
S-237			70		69		67		65		62	
S-238	93	93	93		93		93		93		92	
S-239	95	95	95	95	95	95	94	95	94	95	94	95
S-240	86	87	87		86		86		85		85	
S-241	94	93	91		91		91		91		91	
S-243	97	97	97		97		97		97		96	
S-244	93	93	92		92		92		92		91	
S-245	96	97	98		98		97		97		97	

Secondary System

Individual Routes

Congestion Indices

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-246	94	95	95		95		95		95		94	
S-247	99	100	100		100		100		100		100	
S-248	92	92	92		92		92		91		91	
S-249	97	96	87		97		88		87		86	
S-250	94	94	94		93		93		93		93	
S-251	96	97	97		98		95		95		95	
S-252	95	95	94		98		93		93		93	
S-253	97	82	95	95	95	95	95	95	95	95	94	95
S-254	93	94	94		94		93		93		93	
S-255	98	95	97		97		98		95		96	
S-257	80	87	81		88		88		86		79	
S-258	88	87	87		88		88		87		86	
S-259	98	96	94		93		93		92		92	
S-260	79	78	78		77		79		75		73	
S-261	98	95	96	96	97	96	95	95	95	95	95	95
S-263	79	78	78		77		75		73		70	
S-269	79	96	87		92		88		53		49	
S-271	94	94	94	95	94	94	93	94	93	94	93	93
S-272	79	78	78		77		79		81		72	
S-273	92	91	97		88		97		87		86	
S-275	97	87	96		88		88		63		61	
S-276	88	82	94	94	93	83	92	83	81	82	80	81
S-277	99	96	96		98		99		95		98	
S-278	88	95	85		93		88		82		80	
S-279	73	78	78		79		73		81		68	
S-280	79	78	96		79		79		73		72	
S-282	88	96	96		88		88		81		59	
S-283	93	93	93		92		88		91		90	
S-284	98	96	96		88		88		86		85	
S-285	98	95	96		98		98		96		95	
S-286	98	87	96		88		88		86		84	
S-287	92	82	94		80		77		75		71	
S-288	81	82	80		78		75		73		70	
S-290	88	90	88		88		86		85		84	
S-291	within Belgrade Urban Limits - Now U-0606											
S-292	Images not available											
S-294	94	95	97		96		96		96		95	
S-295	92	92	94		93		93		93		92	
S-297	98	98	98		98		98		98		98	
S-298	80	82	81	82	81	82	80	81	80	80	79	80
S-300	96	96	97		96		96		96		96	
S-302	88	87	87		87		87		86		86	
S-306	89	89	90		89		88		87		86	

Secondary System

Individual Routes

Congestion Indices

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-308	87	87	85		84		82		80		78	
S-310	98	98	98	98	98	98	98	98	97	97	97	97
S-311	96	95	95		95		95		94		94	
S-313	87	87	Images not available									
S-314	88	89	88		87		85		84		83	
S-317	58	61	59		56		51		47		44	
S-320	99	98	98		98		98		98		98	
S-322	92	94	94		93		93		93		93	
S-323	97	96	97	97	97	97	97	97	96	96	96	96
S-324	94	93	94	94	93	93	92	93	92	92	91	91
S-325	97	98	98		97		97		97		97	
S-326		97	97		97		97		97		96	
S-327	98	98	98		97		97		97		97	
S-328	99	98	99		99		99		99		99	
S-330	93	92	93	94	92	93	92	92	91	92	90	91
S-331	86	85	86		86		85		85		85	
S-332	97	98	97		97		96		96		96	
S-334	91	91	92		92		91		91		91	
S-335	95	96	96		96		96		96		96	
S-336	99	99	99		99		99		99		99	
S-338	96	95	96		96		96		95		95	
S-340	98	97	97		97		97		97		97	
S-341	99	99	99		99		99		99		99	
S-342		68	68		67		66		65		65	
S-343	96	98	98		98		98		98		97	
S-344	93	94	93		92		92		91		91	
S-345	81	80	79		77		75		73		71	
S-346	83	85	84		83		82		81		79	
S-347	83	84	81		80		78		76		73	
S-348	95	93	95		94		93		93		92	
S-350	95	96	94		93		93		93		92	
S-352	84	83	85		84		83		83		82	
S-354	90	89	86	86	85	85	84	84	83	83	82	82
S-357	93	92	93		93		92		92		92	
S-358	95	94	94		94		94		93		93	
S-359	86	85	85		84		83		81		79	
S-360	89	89	90		89		88		87		86	
S-363	99	99	98		98		98		98		98	
S-365	96	94	96		96		96		95		95	
S-366	98	98	98		97		97		97		97	
S-370	82	83	83		81		79		76		73	
S-373	67	70	68		65		61		57		53	
S-374	92	95	97		97		96		96		96	

Secondary System

Individual Routes

Congestion Indices

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-379	98	96	96		96		95		95		95	
S-381	96	95	98		97		97		97		97	
S-382	89	89	89		88		85		87		87	
S-384	93	92	93		93		92		92		91	
S-386	83	81	81		85		80		81		79	
S-387	84	85	85		85		84		87		84	
S-391	97	98	97		97		95		96		95	
S-393	81	80	80		79		77		75		73	
S-396	98	98	98		98		98		98		98	
S-398	Images not available											
S-399	90	84	87	88	87	87	87	87	86	86	86	86
S-400	99	99	98		98		98		98		97	
S-401	82	83	84		83		83		82		81	
S-405	96	96	93		92		92		92		92	
S-408	92	92	92		91		91		90		90	
S-409	99	99	98		98		98		98		98	
S-411	67	77	77		75		73		70		68	
S-412	63	54	54		52		51		49		47	
S-413	99	99	99		99		99		99		99	
S-416												
S-417	97	97	97		97		96		96		96	
S-418												
S-419	83	83	81		80		78		77		75	
S-420	85	83	81		83		82		81		81	
S-421	85	85	84		83		82		81		80	
S-422	97	97	95		95		94		94		93	
S-424	66	65	64		61		58		54		51	
S-426	97	97	97		97		96		96		96	
S-427	93	93	93		93		93		92		92	
S-428			Route absorbed into Billings Urban Area - 12/26/02 - (U-1011)									
S-429	60	64	Route absorded into Billings Urban Area - 12/26/02 - (U-1031)									
S-430	64	61	64	70	60	67	56	63	51	60	47	56
S-431	93	93	93		92		92		91		91	
S-432	97	98	98		98		98		98		98	
S-434	85	85	85		84		83		82		81	
S-435	96	97	96		95		94		94		93	
S-437	98	98	98		98		97		97		97	
S-438	97	96	97		97		97		96		96	
S-441	89	88	90		89		88		87		86	
S-444	97	96	96		96		95		95		94	
S-446	95	95	92		91		91		90		90	
S-447	96	95	94		93		93		93		92	
S-448	98	99	98		98		98		98		98	

Secondary System

Individual Routes

Congestion Indices

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-449	97	97	98		98		97		97		97	
S-451	87	84	86		85		84		83		82	
S-453	74	69	72		70		67		64		61	
S-454	81	81	81		81		81		80		79	
S-457	98	99	99		99		98		98		98	
S-462	99	99	98		98		98		98		98	
S-463	93	92	91		91		90		90		90	
S-464	87	89	89		89		88		87		87	
S-466	87	90	90		89		89		88		88	
S-467	98	98	98		98		98		97		97	
S-470	97	98	97		96		96		96		96	
S-471	90	88	89		88		87		86		86	
S-472	86	86	87	88	86	87	85	86	84	85	83	84
S-473	78	73	73		70		67		65		62	
S-474	66	67	64		63		61		60		58	
S-478	92	88	88		88		88		88		87	
S-480	96	96	95		95		94		94		93	
S-482	83	84	85		84		83		82		81	
S-484	97	97	96		96		96		96		95	
S-486	85	83	82		81		80		79		79	
S-487	56	49	50		45		39		37		34	
S-489	94	93	90		90		90		90		89	
S-493	95	94	94		93		93		93		92	
S-494	96	97	97		96		96		96		96	
S-500	97	97	96		96		96		95		95	
S-503	83	83	78	80	77	78	75	76	74	75	72	73
S-504	99	98	99		99		99		99		99	
S-507	84	85	85		85		84		84		83	
S-508	88	89	89		88		87		86		86	
S-509	98	98	97		97		96		96		96	
S-510	510 dropped from Secondary System as per System Action dated 4/99											
S-511	91	93	94		94		93		93		93	
S-512	96	97	98		97		97		97		96	
S-513	93	93	93		92		92		92		91	
S-515	89	515 dropped from Secondary System as per System Action dated 6/01										
S-516	96	90	90		90		89		89		89	
S-517	90	91	92		92		91		91		91	
S-518	72	71	71		69		66		63		60	
S-522	62	64	63		60		58		56		54	
S-528	97	97	97		97		97		96		96	
S-529	96	96	97		96		96		96		95	
S-531	82	85	85		84		83		81		79	
S-532		85	85		84		83		82		81	

Secondary System

Individual Routes

Congestion Indices

Route Name	1999 Existing	2000 Existing	2001 Existing	2001 E+C[3]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
S-533	80	81	81		80		79		77		76	
S-534	97	97	97		97		97		97		96	
S-537	98	97	97		97		96		96		96	
S-540	89	85	86	86	84	84	82	82	80	81	78	78
S-541	98	98	98		98		98		98		97	
S-543	97	97	96		96		96		95		95	
S-544	97	96	96		96		95		95		95	
S-547	96	97	97		96		96		96		96	
S-548	61	60	59		57		54		49		42	
S-551	89	92	93		92		92		92		91	
S-552	96	96	96		96		96		96		96	
S-556	98	96	97		97		96		96		96	
S-559	92	93	93		92		92		91		90	
S-563	97	563 dropped from Secondary System as per System Action dated 6/01										
S-564	99	99	98		98		98		97		97	
S-565	91	91	91		91		90		90		90	
S-566	94	94	97		97		97		96		96	
S-567	89	90	Images not available									
S-568	91	91	91		91		91		90		90	
S-569												
S-570	Images not available											
S-571												
S-572												
S-573												

Those CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1] Traffic year

[2] Existing Highway Network

[3] Existing plus Committed Highway Network

No capacity enhancing projects planned for this route.

No general inventory data available; no CIs were computed.

Route has been realigned **or** assigned a new route number not compatable with CoMS. Unable to compute accurate CIs.

Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried.

Secondary

District Mileage Comparison
Secondary System

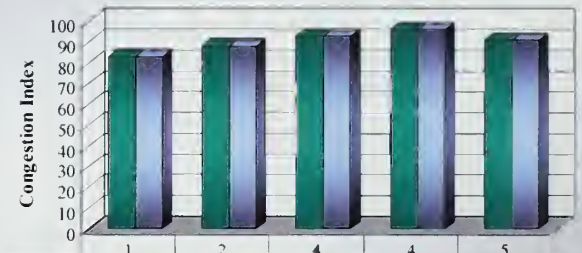
Figure S-3

	1	2	3	4	5
Total Secondary Miles	475	559	1378	1446	828

Current

District Comparison
Secondary System
2001 Congestion Indices

Figure S-4



	1	2	4	4	5
Existing	83	93	93	96	91
E + C	83	88	93	96	91

Projected 5 Year

District Comparison
Secondary System
2006 Congestion Indices

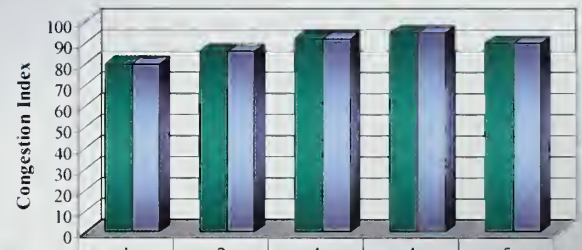
Figure S-5

	1	2	4	4	5
Existing	91	87	92	95	91
E + C	82	87	92	95	91

Projected 10 Year

District Comparison
Secondary System
2011 Congestion Indices

Figure S-6

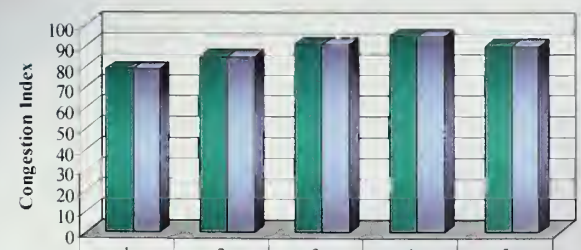


	1	2	4	4	5
Existing	80	86	92	95	90
E + C	80	86	92	95	90

Projected 15 Year

District Comparison
Secondary System
2016 Congestion Indices

Figure S-7

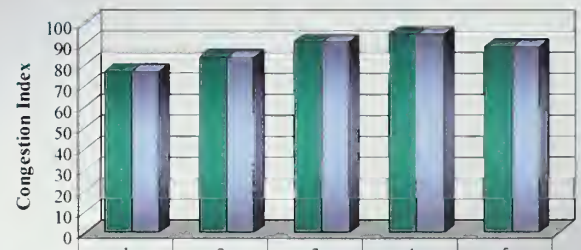


	1	2	3	4	5
Existing	79	85	91	95	90
E + C	79	85	91	95	90

Projected 20 Year

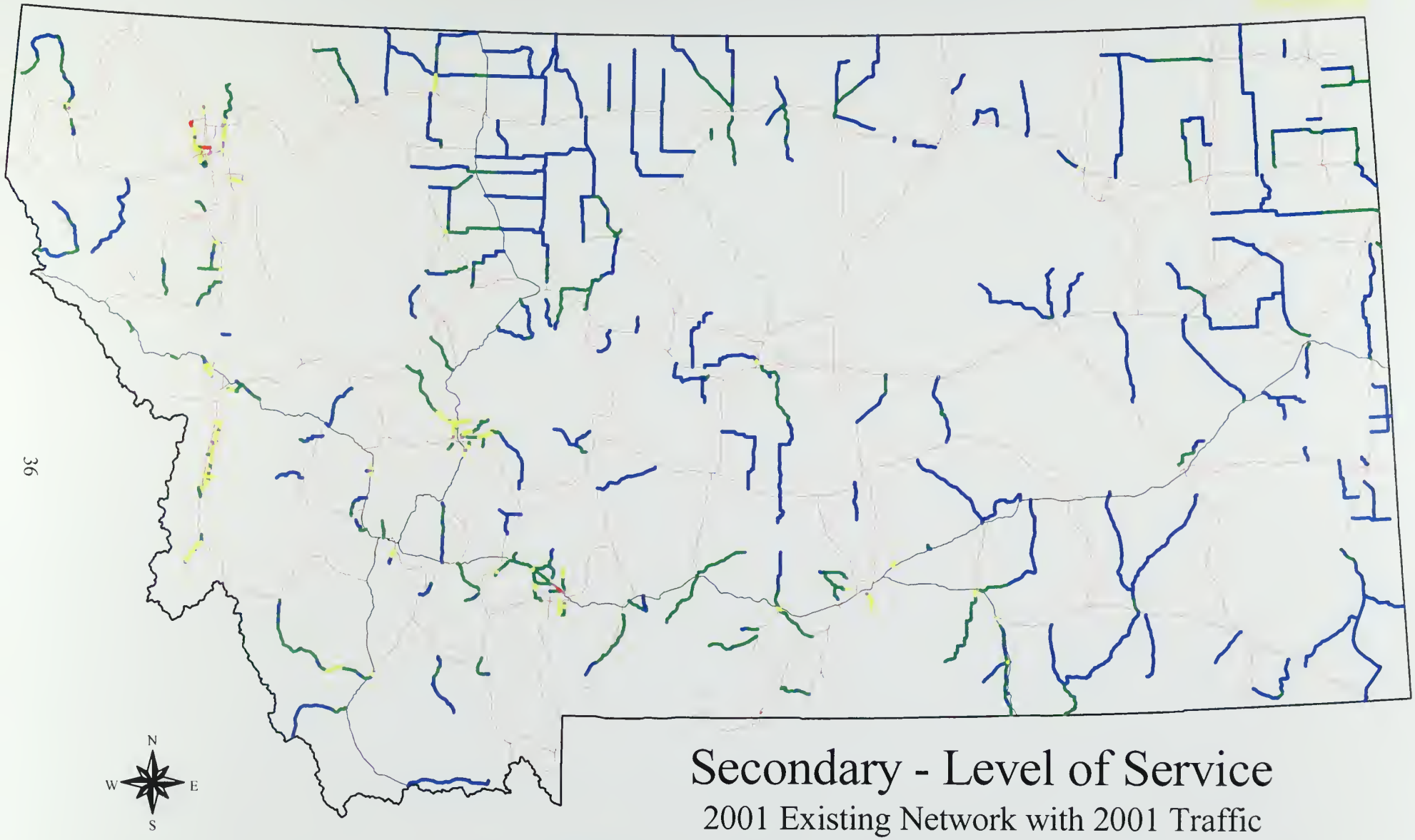
District Comparison
Secondary System
2021 Congestion Indices

Figure S-8



	1	2	3	4	5
Existing	77	84	91	95	89
E + C	77	84	91	95	89

Figure S-9



Secondary - Level of Service

2001 Existing Network with 2001 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary
- Secondary

MDT serving you with pride

Data and Statistics Bureau

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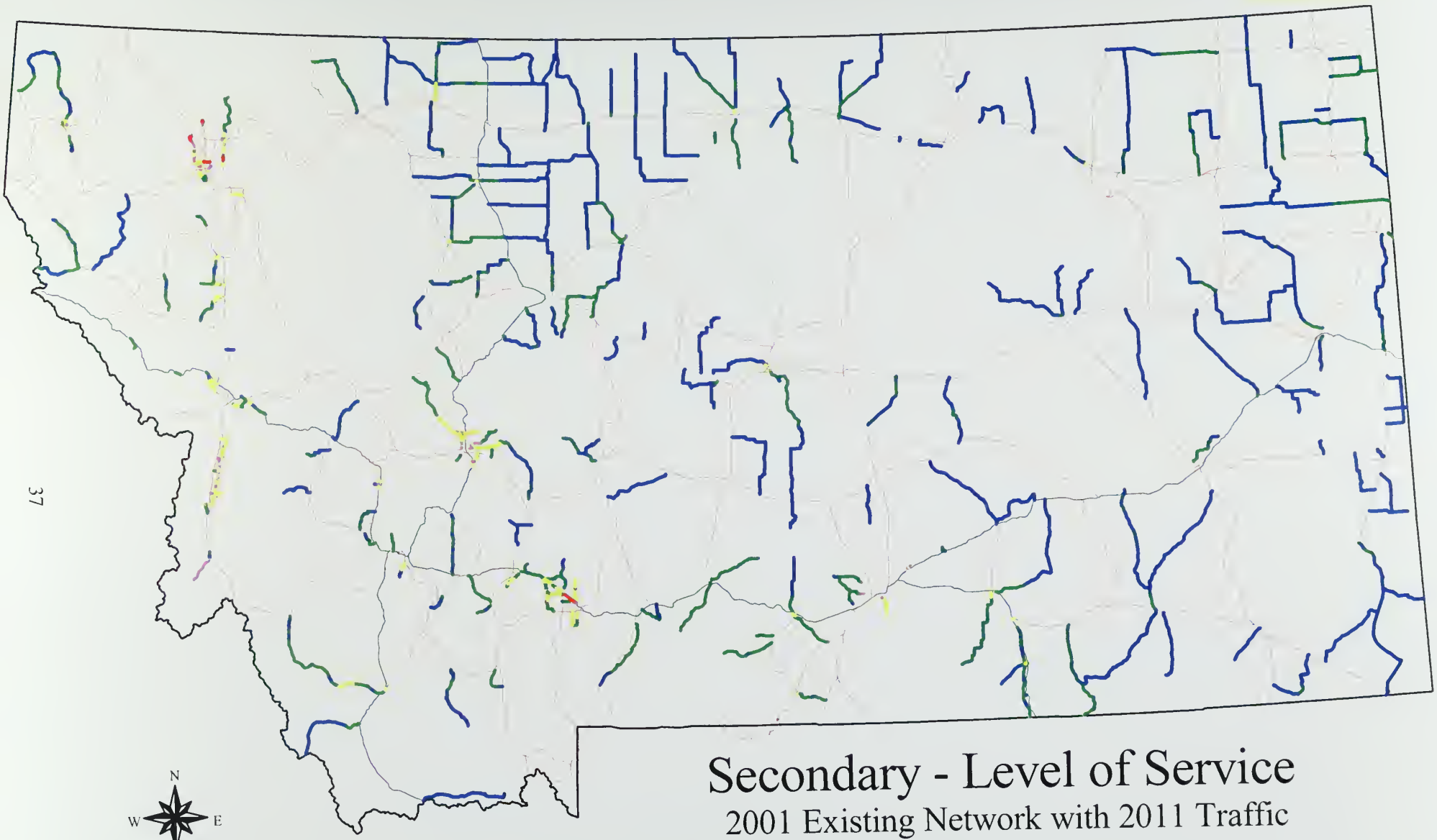
Figure S-10



Secondary - Level of Service

2001 Existing Network with 2011 Traffic

N
W E
S

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary
- Secondary

MDT serving you with pride

Data and Statistics Bureau

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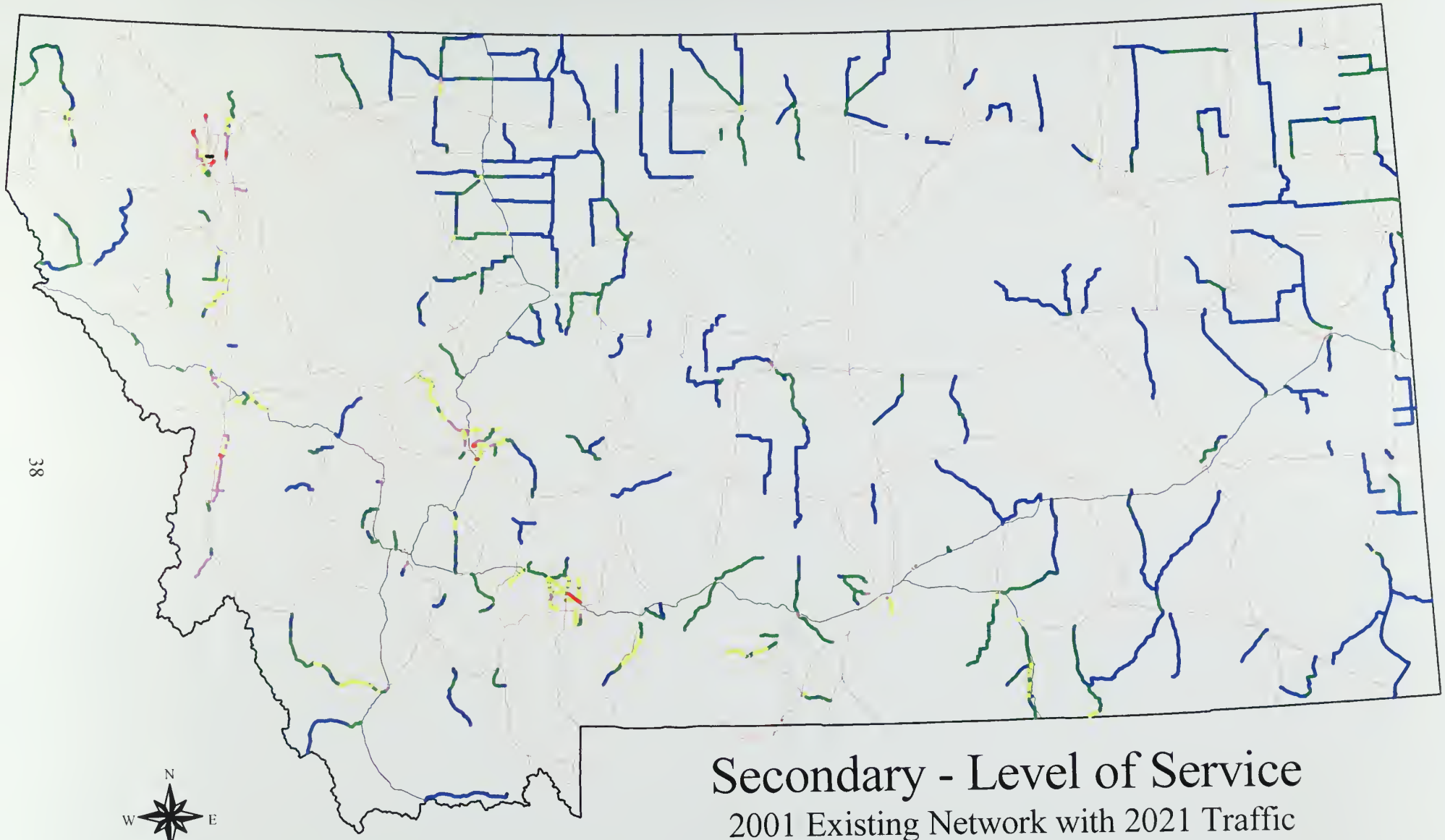
Figure S-11



Secondary - Level of Service

2001 Existing Network with 2021 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary
- Secondary

N
W E
S

MDT serving you with pride

Data and Statistics Bureau

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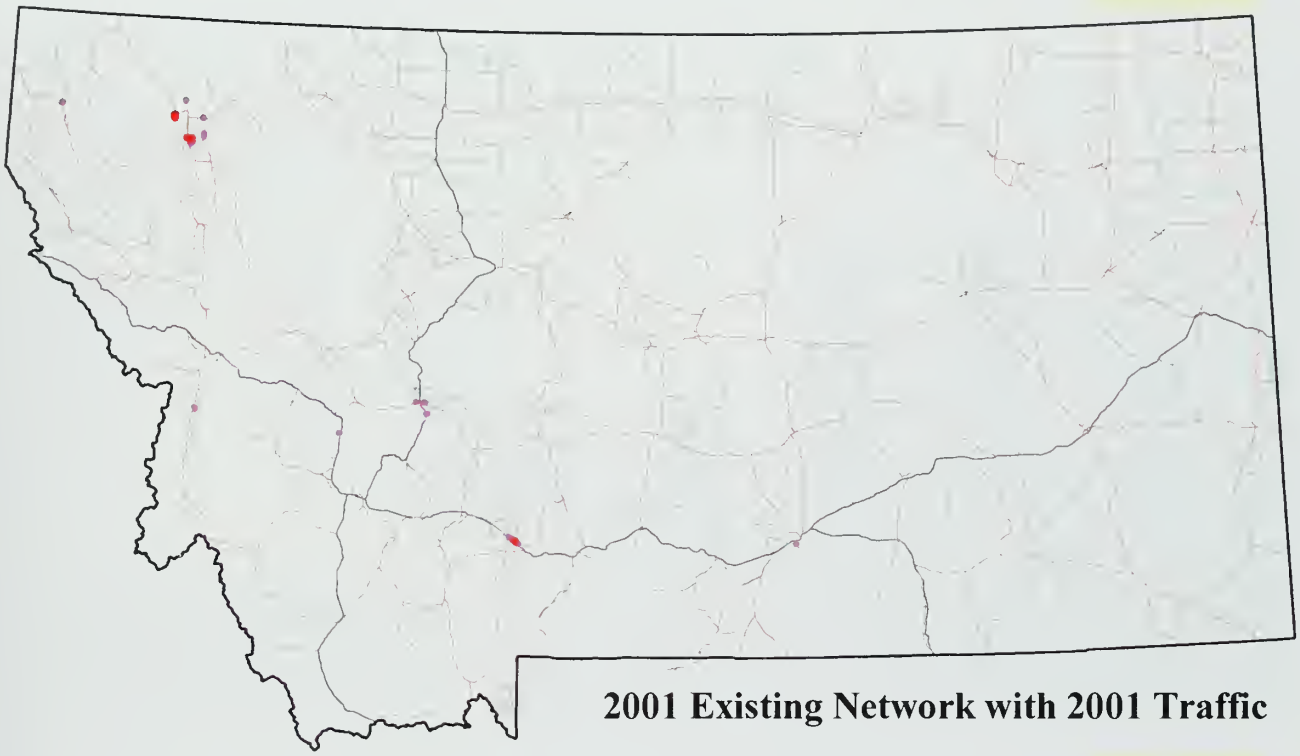
Secondary Level of Service "Hot Spots"

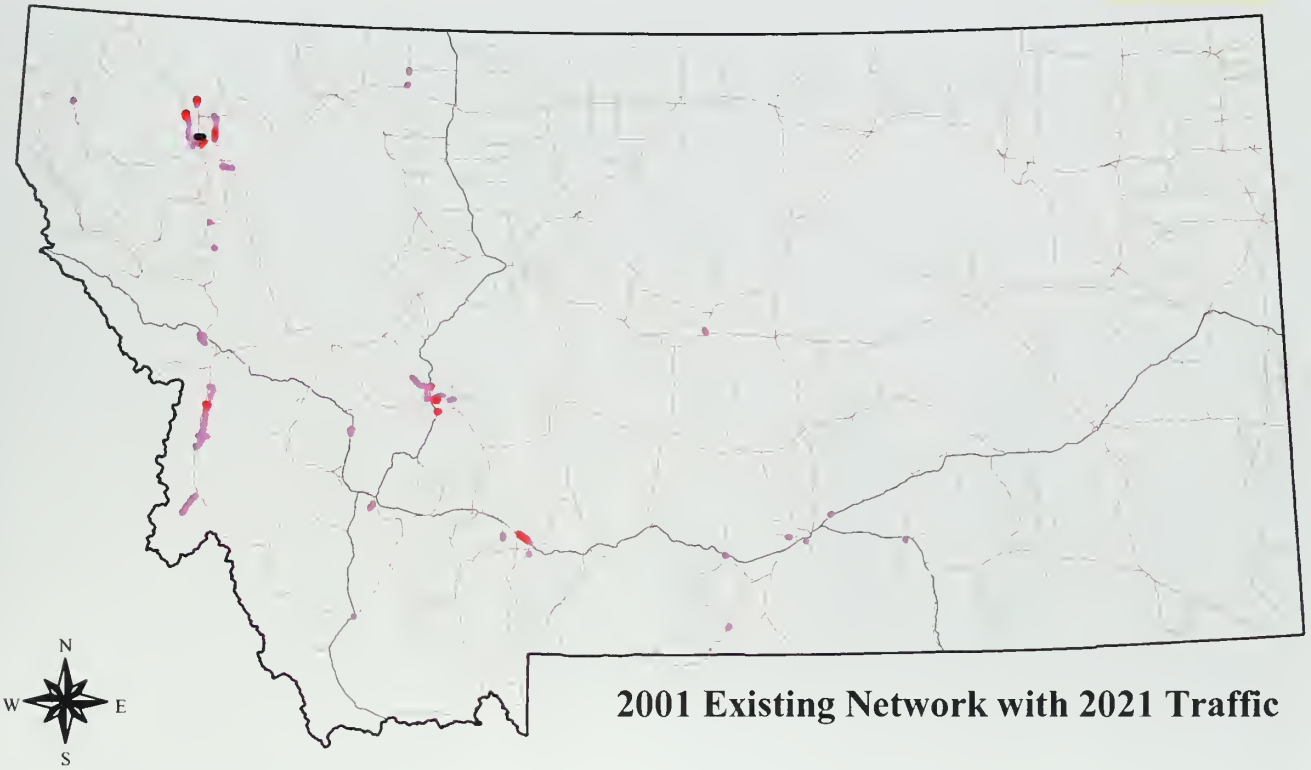
(Congestion Index < 55 - LOS D or Lower)

Figure S-12



2001 Existing Network with 2001 Traffic

Figure S-13



2001 Existing Network with 2021 Traffic

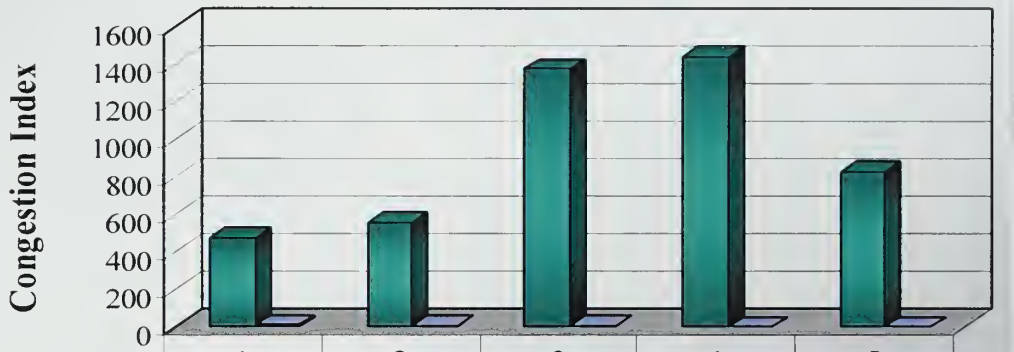
- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary
- Secondary

2001 District Comparison "Hotspots"

Figure S-14

Secondary System

Congestion Index < 55 (LOS D or lower)



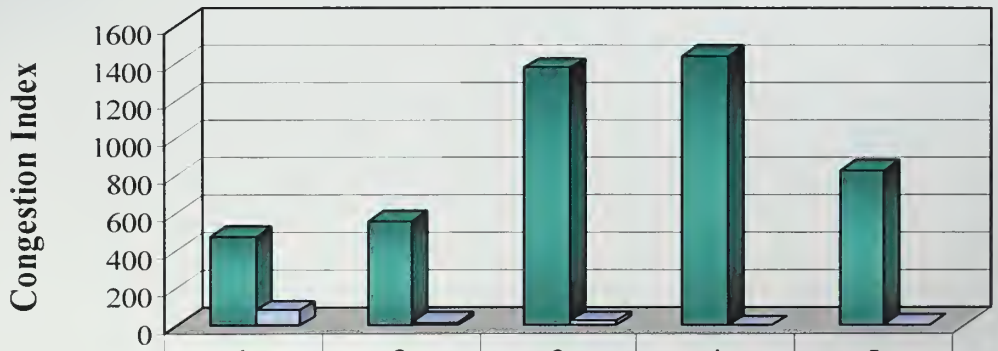
	1	2	3	4	5
Total Secondary Miles	475	559	1378	1446	828
Miles of CI < 55	10	7	1	0	0

2021 District Comparison "Hotspots"

Figure S-15

Secondary System

Congestion Index < 55 (LOS D or lower)



	1	2	3	4	5
Total Secondary Miles	475	559	1378	1446	828
Miles of CI < 55	79	13	20	0	5

State Highway System

Existing Network

Due to the unavailability of traffic data, all but five of the routes on the State Highway System could **not** be analyzed. Therefore, no statewide or district analysis was done for this system.

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. There were no State Highway capacity enhancing projects identified in the 2002-2003 TCP for the routes analyzed.

Individual State Highway Routes

Figure SH-1 illustrates the Existing and E+C network CI by individual routes for the five state highways that we have traffic data available.

Missing Data Report

Due to the large number of routes that were unable to be analyzed for this report, the individual route numbers and lengths were not listed out.

Figure SH-1

Route No.	1999[1] Existing[2]	2000 Existing	2001 Existing	2001 E+C	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
X-07611	64	66	67		63		58		53		49	
X-18203	74	76	76		74		71		69		67	
X-32200	54	64	64		61		58		54		52	
X-56683	60	61	71		67		62		58		53	
X-81064	47	53	47		43		39		36		34	

Those CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1] Traffic year

[2] Existing Highway Network

[3] Existing plus Committed Highway Network

No capacity enhancing projects planned for this route

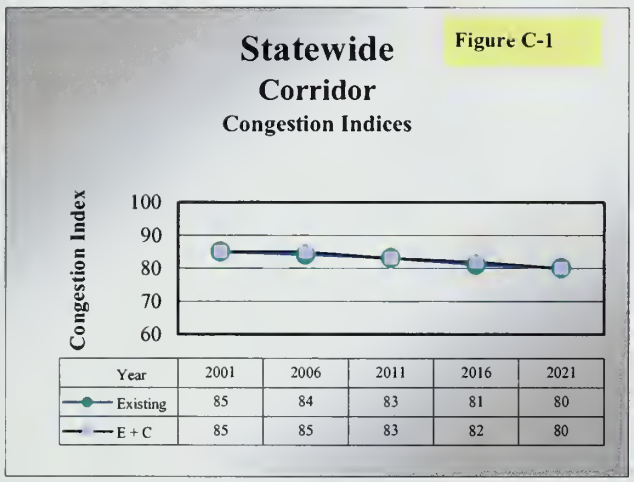
Rural Corridors

General Information

Corridors are comprised of routes ranging from the Interstate system to off-system State Highways, but as is the case with the individual system runs, only the rural portions of the Corridor, except in the case of the Interstate, were analyzed.

Existing Network

As illustrated in **Figure C-1**, the overall, statewide existing network CI is currently 85 (LOS A) and will not fall below a CI of 80 (LOS B) within the next 20 years.



E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. Refer to the individual systems section of this report for a list of the projects.

Individual Corridor Routes

Figure C-2 (see pages 43-50) illustrates the Existing and E+C Network CIs by individual **Corridor**.

District Comparisons

At the present time, CoMS is unable to analyze Corridors by financial district. Every attempt will be made to make that comparison in the next CoMS report.

Hot Spots

Hot spot maps were developed to better illustrate segments of highway systems that currently have or are projected to have service levels of less than an established acceptable LOS. Since the Corridors are combinations of other systems, it would be redundant to display the hotspots that are already displayed in each systems individual section in this report.

Missing Data Report

The data missing from the Corridor section reflects the same information missing from each individual systems section. Again, it would be redundant to list the missing information.

Rural Corridor

Congestion Indices

June 2003

Figure C-2

Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000001	N/P-1	78	79	77	77	75	76	73	74	71	72
C000002	P-2	83	87	87	87	80	87	86	60	86	86
C000003	N/P-3	77	80	86	79	75	79	74	78	73	77
C000004	N/P-4	77	78	86	76	75	75	73	73	72	72
C000005	N-5	55	58	50	54	46	50	42	46	38	42
C000006	P-9	55	75	72	73	69	70	65	60	62	62
C000007	N/P-7	63	75	64	84	59	82	86	81	54	79
C000008	N/P-8	71	75	87	72	63	69	86	60	57	63
C000009	P-9	87	87	86	87	80	87	86	60	86	86
C000010	N/P-10	83		82		81		86		78	
C000011	N/P-14	70		76		73		86		66	
C000012	N-12	44		38		32		87		25	
C000013	P-13	69	70	86	87	63	63	59	60	56	56
C000014	N/P-14	84	75	64	84	82	84	81	82	80	81
C000015	I-15	69		89		95		94		93	
C000016	N-16	69		86		63		86		57	
C000017	P-17	83		86		87		87		87	
C000018	P-18	91	92	91	91	80	91	86	90	89	90
C000019	P-18	73	73	72	73	71	72	73	71	69	70
C000020	N/P-20	70	78	77	77	75	70	73	75	73	74
C000021	P-21	70	81	79	84	78	84	78	78	77	78
C000022	N/P-22	55	75	64	85	63	84	83	83	82	83
C000023	N/P-23	71	83	89	82	80	81	78	81	78	80
C000024	N-24	69		64		62		86		58	
C000025	P-25	69		89		80		86		88	
C000026	P-26	83		89		95		86		83	
C000027	P-27	83	83	83	84	63	84	42	83	82	82
C000028	P-28	70		79		73		72		70	
C000029	P-29	70	73	64	71	87	69	65	60	64	66
C000030	P-30	83		83		63		83		82	
C000031	P-41	91		91		91		90		90	
C000032	P-32	89		89		89		88		88	
C000033	P-33	66		63		60		57		53	
C000034	N-34										
C000035	P-35	76		73		71		68		64	
C000036	P-36	79		78		76		74		72	
C000037	N-37	76	76	75	75	73	74	72	73	71	71
C000038	N-38	40		37		32		28		6	
C000039	P-39	78	79	78	78	77	77	76	77	75	76
C000041	P-41	78		76		74		72		70	
C000042	P-42	91		91		90		90		90	
C000043	P-43	88		87		87		86		86	
C000044	P-18	85	85	84	85	84	84	83	84	83	83
C000045	P-18	84	85	83	84	83	84	82	83	82	83
C000046	P-36	85	86	84	85	83	83	81	82	80	80
C000047	P-47	84		83		82		82		81	

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000048	P-48	Images not available									
C000049	P-49	71	71	70	70	68	69	67	67	66	66
C000050	N/P-50	54		49		45		37		32	
C000051	P-51	91	91	91	91	90	90	90	90	89	90
C000052	P-52	44	44	41	41	38	38	35	35	29	29
C000053	N-53	86		85		83		81		79	
C000054	P-54	88		87		87		87		86	
C000055	P-55	74	74	72	72	69	69	67	67	64	64
C000056	P-56	73	73	71	71	69	70	67	68	66	66
C000057	N/P-57	84	84	83	84	82	83	82	82	81	81
C000058	P-58	69		67		65		64		62	
C000059	P-59	90	91	90	90	89	90	88	89	87	88
C000060	N/P-60	80		79		78		77		76	
C000061	N-61	84	84	83	83	82	82	81	81	79	79
C000062	N-62	86	87	85	86	85	86	84	86	83	85
C000063	N-63	76	76	75	75	73	74	72	72	70	70
C000065	P-65	39		36		32		27		0	
C000066	P-66	84		83		82		81		80	
C000067	P-67	73		73		72		71		70	
C000068	P-68	78		77		76		74		73	
C000069	P-69	80	80	78	78	76	76	73	74	71	71
C000072	P-72	76	79	73	77	71	75	68	72	64	70
C000075	P-75	76		75		75		73		73	
C000078	P-78	67	69	63	66	59	62	55	58	52	54
C000080	P-80	89		88		88		88		87	
C000081	P-81	88		87		87		87		87	
C000082	P-82	52	56	47	51	43	46	38	42	35	38
C000083	P-83	54	55	52	53	51	51	46	48	44	44
C000084	P-84	67	70	64	66	60	63	55	59	51	54
C000085	N-85	57		52		46		40		35	
C000086	P-86	70		68		66		64		62	
C000087	P-87	67		63		58		53		48	
C000088	N-88	78		77		77		76		75	
C000089	P-89	62	63	60	62	59	60	57	58	55	56
C000090	I-90	91		89		87		85		82	
C000091	P-91	66		64		63		62		61	
C000092	N-92										
C000093	N-93	55		52		50		48		45	
C000094	I-94	96		96		95		95		94	
C000095	P-95	75		75		74		74		73	
C000096	P-96	74		74		73		72		71	
C000097	P-97	Images not available									
C000098	P-98	94		93		93		93		93	
C000099	N-99	96	97	96	97	96	96	96	96	96	96
C005203	N-101										
C005205	N-102										
C005210	N-103										

Rural Corridor

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Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C005211	N-104										
C005250	N-105										
C000115	I-115	96		96		95		95		94	
C000201	S-201	93		93		92		92		92	
C000202	S-202	87		87		86		86		86	
C000203	S-203	71		68		65		61		58	
C000204	S-204	98		98		98		98		98	
C000205	S-205	72	73	70	71	68	68	66	66	64	64
C000206	S-206	64		60		57		53		50	
C000207	S-207	98		98		98		98		97	
C000208	S-208	97		97		96		96		96	
C000209	S-209	63		60		57		55		53	
C000210	S-210	85		83		81		78		76	
C000211	S-211	78		76		75		73		72	
C000212	S-212	84		82		80		78		76	
C000213	S-213	91		90		90		89		88	
C000214	S-214	93		93		92		92		92	
C000215	S-215	90		90		89		89		89	
C000217	S-217	99		98		98		98		98	
C000218	S-218	94		94		94		93		93	
C000219	S-219	93	93	93	93	92	92	92	92	91	91
C000220	S-220	91		90		89		88		86	
C000221	S-221	87		86		85		84		83	
C000222	S-222	78		76		75		73		71	
C000223	S-223	92		92		91		91		91	
C000224	S-224	96		96		95		95		95	
C000225	S-225/U-5213[1]	95		95		95		94		94	
C000226	S-226/U-5214[1]	93		92		92		91		91	
C000227	S-227	87		86		85		84		83	
C000228	S-228	92		92		91		90		89	
C005809	S-229/U-5809[1]	66		64		62		59		57	
C000231	S-231/U-5820[1]	66		63		60		56		53	
C000232	S-232/U-5711[1]	91		91		90		89		89	
C000233	S-233	97	97	97	97	97	97	96	96	96	96
C000234	S-234/U-5708[1]	86	86	85	86	85	85	85	85	84	85
C000235	S-235/U-1211[1]	79	83	77	81	75	80	73	78	71	76
C000236	S-236	Images not available									
C000237	S-237/U-7101[1]	70		69		67		65		62	
C000238	S-238/U-7111[1]	93		93		93		93		92	
C000239	S-239	95	95	95	95	94	95	94	95	94	95
C000240	S-240	87		86		86		85		85	
C000241	S-241	91		91		91		91		91	
C000243	S-243	97		97		97		97		96	
C000244	S-244	92		92		92		92		91	
C000245	S-245	98		98		97		97		97	
C000246	S-246	95		95		95		95		94	
C000247	S-247	100		100		100		100		100	

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Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000248	S-248	92		92		92		91		91	
C000249	S-249	88		87		87		87		86	
C000250	S-250	94		94		94		93		93	
C000251	S-251	96		96		95		95		95	
C000252	S-252	94		94		91		93		93	
C000253	S-253	95	95	95	95	95	95	95	95	94	95
C000254	S-254	94		94		94		93		93	
C000255	S-255	97		97		96		96		96	
C000257	S-257	81		81		91		80		79	
C000258	S-258	88		87		87		87		86	
C000259	S-259	94		93		93		92		92	
C000260	S-260	78		77		76		75		73	
C000261	S-261	96	96	96	95	96	95	95	95	95	95
C000263	S-263/U-8123[1]	79		77		75		74		70	
C000269	S-269	66		62		58		53		49	
C000271	S-271	94	95	94	94	94	94	93	94	93	93
C000272	S-272	78		77		76		74		72	
C000273	S-273	90		89		88		87		86	
C000275	S-275	68		66		64		63		61	
C000276	S-276	83	84	84	83	82	83	81	82	80	81
C000277	S-277	99		94		99		96		98	
C000278	S-278	85		94		91		82		80	
C000279	S-279	78		76		73		74		68	
C000280	S-280/U-5823[1]	80		76		76		74		72	
C000282	S-282	66		65		61		61		59	
C000283	S-283	93		92		91		81		90	
C000284	S-284	89		88		87		86		85	
C000285	S-285	96		96		96		95		95	
C000286	S-286	89		87		86		85		84	
C000287	S-287	83		84		77		75		71	
C000288	S-288	80		78		75		73		70	
C000290	S-290	88		88		86		85		84	
C000291	S-291	within Belgrade Urban Limits - Now U-606									
C000292	S-292	Images not available									
C000294	S-294	97		96		96		96		95	
C000295	S-295	94		93		93		93		92	
C000297	S-297	98		98		98		98		98	
C000298	S-298	81	82	81	82	80	81	80	80	79	80
C000300	S-300	97		96		96		96		96	
C000302	S-302/U-1034[1]	87		87		87		86		86	
C000306	S-306	90		89		88		87		86	
C000308	S-308	85		84		82		80		78	
C000310	S-310	98	98	98	98	98	98	97	97	97	97
C000311	S-311	95		95		95		94		94	
C000313	S-313	Images not available									
C000314	S-314	88		87		85		84		83	
C000315	I-315	61		55		50		44		37	

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Congestion Indices

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Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000317	S-317	59		56		51		47		44	
C000320	S-320	98		98		98		98		98	
C000322	S-322	94		93		93		93		93	
C000323	S-323	97	97	97	97	97	97	96	96	96	96
C000324	S-324	94	94	93	93	92	93	92	92	91	91
C000325	S-325	98		97		97		97		97	
C000326	S-326	97		97		97		97		96	
C000327	S-327	98		97		97		97		97	
C000328	S-328	99		98		96		98		99	
C000330	S-330	93	94	92	93	92	92	97	92	90	91
C000331	S-331	86		96		85		85		85	
C000332	S-332	97		97		96		98		96	
C000334	S-334	92		92		96		97		91	
C000335	S-335	96		96		96		98		96	
C000336	S-336	99		96		96		98		99	
C000338	S-338	96		93		96		95		95	
C000340	S-340	97		97		97		97		97	
C000341	S-341	99		96		96		98		99	
C000342	S-342	68		67		66		65		65	
C000343	S-343	98		96		96		98		97	
C000344	S-344	93		92		92		98		91	
C000345	S-345	79		77		75		83		71	
C000346	S-346	84		93		92		97		79	
C000347	S-347	81		96		79		76		73	
C000348	S-348	95		96		93		93		92	
C000350	S-350	94		93		93		93		92	
C000352	S-352	85		84		93		83		82	
C000354	S-354	86	86	85	85	96	84	83	83	82	82
C000357	S-357	93		93		92		92		92	
C000358	S-358	94		96		92		93		93	
C000359	S-359	85		96		93		97		79	
C000360	S-360	90		96		96		97		86	
C000363	S-363	98		96		96		95		98	
C000365	S-365	96		96		96		95		95	
C000366	S-366	98		97		97		97		97	
C000370	S-370	83		96		79		76		73	
C000373	S-373	68		65		61		57		53	
C000374	S-374	97		97		96		98		96	
C000379	S-379	96		96		96		95		95	
C000381	S-381	98		97		97		97		97	
C000382	S-382	89		96		96		97		87	
C000384	S-384	93		93		92		92		91	
C000386	S-386	81		81		96		97		79	
C000387	S-387	85		85		96		97		84	
C000391	S-391	97		97		96		98		95	
C000393	S-393	80		79		77		75		73	
C000396	S-396	97		98		98		98		95	

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Congestion Indices

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Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000398	S-398	Images not available									
C000399	S-399	87	88	87	87	87	87	86	86	86	86
C000400	S-400	98		98		98		98		97	
C000401	S-401	84		83		83		82		81	
C000405	S-405	93		92		92		92		92	
C000408	S-408	92		91		91		90		90	
C000409	S-409	98		98		98		98		98	
C000411	S-411	77		75		73		70		68	
C001201	S-412/U-1201[1]	54		52		51		49		47	
C000413	S-413	99		99		99		99		99	
C000416	S-416/U-1033[1]										
C000417	S-417	97		97		96		96		96	
C000418	S-418										
C000419	S-419	81		80		78		77		75	
C000420	S-420	81		83		82		81		81	
C000421	S-421	84		83		82		81		80	
C000422	S-422	95		95		94		94		93	
C000424	S-424/U-6706[1]	64		61		58		54		51	
C000426	S-426	97		97		96		96		96	
C000427	S-427	93		93		93		92		92	
C001011	S-428/U-1011[1]	Route absorbed into Billings Urban Area - 12/26/02 - (U-1011)									
C001031	S-429/U-1031[1]	Route absorded into Billings Urban Area - 12/26/02 - (U-1031)									
C000430	S-430/U-5818[1]	64	70	60	67	56	63	51	60	47	56
C000431	S-431	93		92		92		91		91	
C000432	S-432	98		98		98		98		98	
C000434	S-434	85		84		83		82		81	
C000435	S-435	96		95		94		94		93	
C000437	S-437	98		98		97		97		97	
C000438	S-438	97		97		97		96		96	
C000441	S-441	90		89		88		87		86	
C000444	S-444	96		96		95		95		94	
C000446	S-446	92		91		91		90		90	
C000447	S-447	94		93		93		93		92	
C000448	S-448	98		98		98		98		98	
C000449	S-449	98		98		97		97		97	
C000451	S-451	86		85		84		83		82	
C000453	S-453	72		70		67		64		61	
C000454	S-454/U-5824[1]	81		81		81		80		79	
C000457	S-457	99		99		98		98		98	
C000462	S-462	98		98		98		98		98	
C000463	S-463	91		91		90		90		90	
C000464	S-464	89		89		88		87		87	
C000466	S-466	90		89		89		88		88	
C000467	S-467	98		98		98		97		97	
C000470	S-470	97		96		96		96		96	
C000471	S-471	89		88		87		86		86	
C000472	S-472	87	88	86	87	85	86	84	85	83	84

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Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C000473	S-473	73		70		67		65		62	
C000474	S-474	64		63		61		60		58	
C000478	S-478	88		88		88		88		87	
C000480	S-480	95		95		94		94		93	
C000482	S-482	85		84		83		82		81	
C000484	S-484	96		96		96		96		95	
C000486	S-486	82		81		80		79		79	
C000487	S-487	50		45		39		37		34	
C000489	S-489	90		90		90		90		89	
C000493	S-493	94		93		93		93		92	
C000494	S-494	97		96		96		96		96	
C000500	S-500	96		96		96		95		95	
C000503	S-503/U-6713/U-6730[1]	78	80	77	78	75	76	74	75	72	73
C000504	S-504	99		99		99		99		99	
C000507	S-507	85		85		84		84		83	
C000508	S-508	89		88		87		86		86	
C000509	S-509	97		97		96		96		96	
C000511	S-511	94		94		93		93		93	
C000512	S-512	98		97		97		97		96	
C000513	S-513	93		92		92		92		91	
C000516	S-516	90		90		89		89		89	
C000517	S-517	92		92		91		91		91	
C000518	S-518	71		69		66		63		60	
C000522	S-522	63		60		58		56		54	
C000528	S-528	97		97		97		96		96	
C000529	S-529	97		96		96		96		95	
C000531	S-531	85		84		83		81		79	
C000532	S-532/U-6901[1]	85		84		83		82		81	
C000533	S-533/U-8131/U-8132[1]	81		80		79		77		76	
C000534	S-534	97		97		97		97		96	
C000537	S-537	97		97		96		96		96	
C000540	S-540	86	86	84	84	82	82	80	81	78	78
C000541	S-541	98		98		98		98		97	
C000543	S-543	96		96		96		95		95	
C000544	S-544	96		96		95		95		95	
C000547	S-547	97		96		96		96		96	
C000548	S-548	59		57		54		49		42	
C000551	S-551	93		92		92		92		91	
C000552	S-552	96		96		96		96		96	
C000556	S-556	97		97		96		96		96	
C000559	S-559	93		92		92		91		90	
C000564	S-564	98		98		98		97		97	
C000565	S-565	91		91		90		90		90	
C000566	S-566	97		97		97		96		96	
C000567	S-567	Images not available									
C000568	S-568	91		91		91		90		90	
C000569	S-569										

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Congestion Indices

Corridor	Departmental Route Name *	2001[2] Existing[3]	2001 E+C[4]	2006 Existing	2006 E+C	2011 Existing	2011 E+C	2016 Existing	2016 E+C	2021 Existing	2021 E+C
C001207	S-570/U-1207[1]	Images not available									
C000571	S-571										
C000572	S-572										
C000573	S-573										
C007611	X-07611	67		63		58		53		49	
C018203	X-18203	76		74		71		69		67	
C032200	X-32200	64		61		58		54		52	
C056683	X-56683	71		67		62		58		53	
C081064	X-81064	47		43		39		36		34	

*Routes included in corresponding corridor. (e.g. C000001 is comprised of N-1 and P-1)

CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1]A Corridor may consist of rural and urban routes however only the rural portion is analyzed by CoMS

[2]Traffic Year

[3]Existing Highway Network

[4]Existing plus Committed Highway Network

No capacity enhancing projects planned for this route

Primary routes located in urban areas; no CI's were computed

No general inventory data available; no CI's were computed

Route has been realigned **or** assigned a new route number not compatable with CoMS. Unable to compute accurate CIs.

Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried

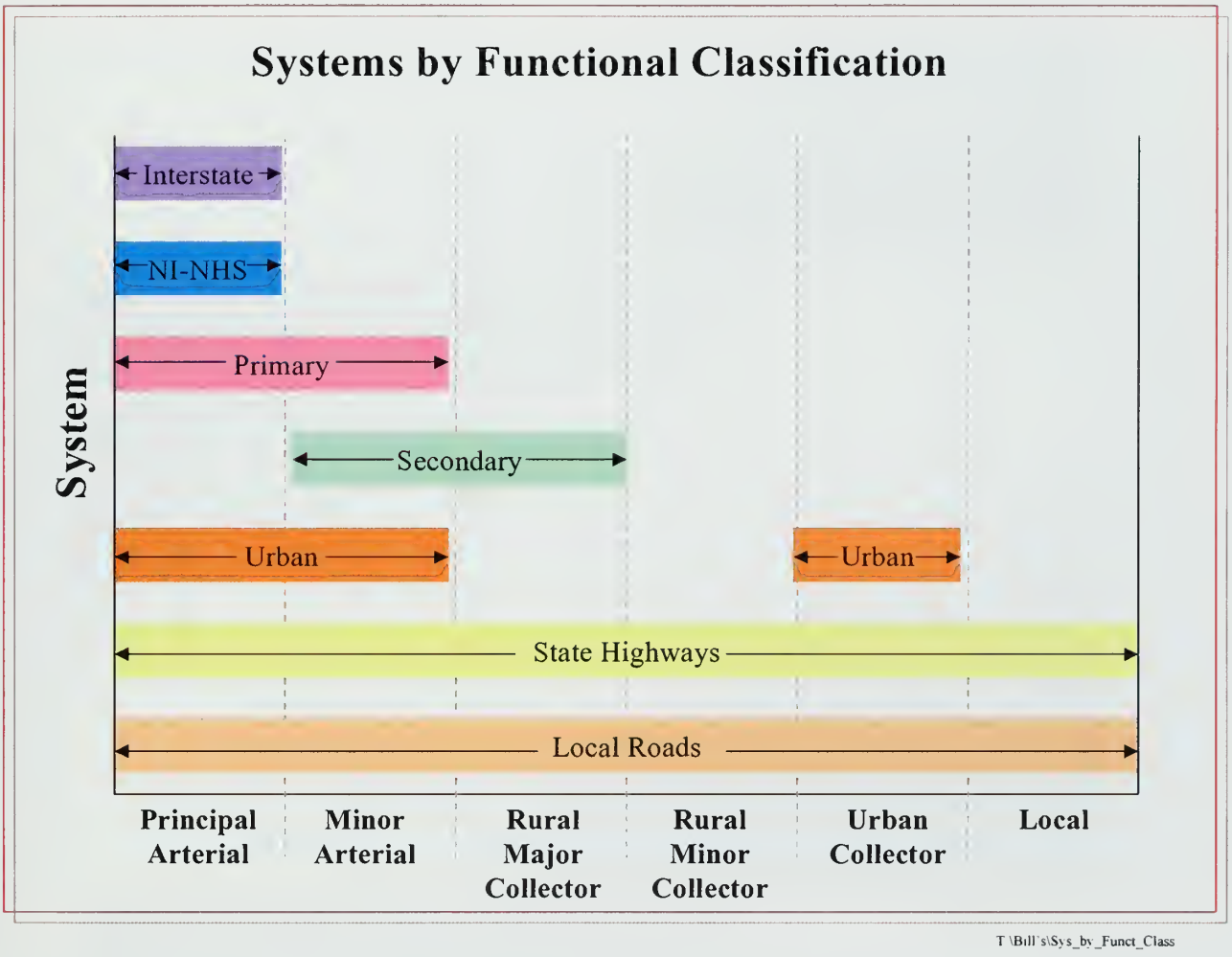
Functional Classification

The CoMS also calculates CIs by rural functional class groupings.

The following chart displays the functional class group in which each system can be classified:

Interstate principal arterials are not reported in this section. The analysis of the remaining principal arterials in this section ***do not*** include the Interstate System.

It should be understood that the functional



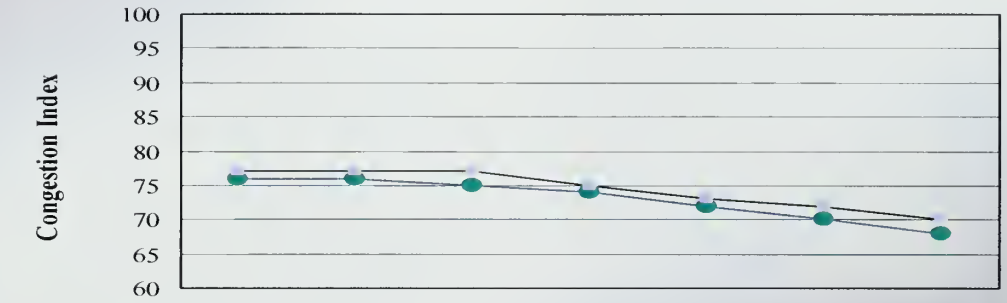
The Interstate system, by definition, consists entirely of principal arterials. Due to it's unique nature, it is usually analyzed based on it's own merit, as is the case within the CoMS. Therefore, the Interstate ***System*** results and the functional class results are the same. The class data herein is reported only to the extent to which it covers the on-system network of highways.

Figures FC-1 through **FC-3** illustrate the statewide CIs by functional class group. (see page 52)

Statewide Functional Classification

Figure FC-1

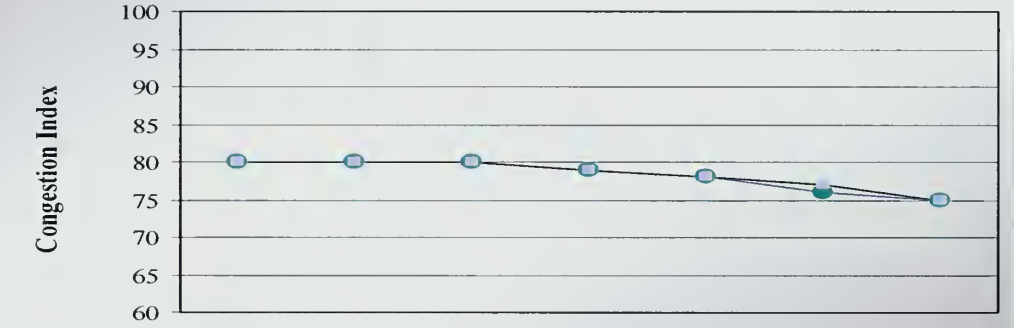
Principal Arterials (Non-Interstate)
Statewide
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	76	76	75	74	72	70	68
E + C	77	77	77	75	73	72	70

Figure FC-2

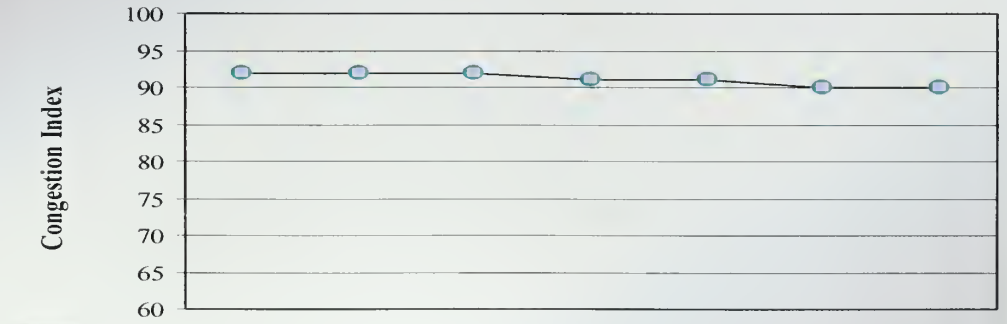
Minor Arterials
Statewide
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	80	80	80	79	78	76	75
E + C	80	80	80	79	78	77	75

Figure FC-3

Major Collectors
Statewide
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	92	92	92	91	91	90	90
E + C	92	92	92	91	91	90	90

Special Facilities

Special facilities are defined as any group of routes, individual routes, or route segments on the rural system for which anyone desires congestion index information.

The CoMS has the capability to calculate current and future year CIs on the Existing and E+C highway systems for current and future year scenarios.

For example, when the Districts are nominating projects, they may want to know what effect a reconstruction project might have on the level of service on a certain segment of highway. Given the location and proposed geometrics of the project, CoMS can calculate the CI under a **"what if"** scenario and compare the results to the same segment of road under the existing conditions. Another use may be for planning purposes.

Often times, corridor studies are undertaken and service levels are usually a consideration. CoMS can be helpful in these instances also.

The combination of "special facilities" is infinite. Anyone desiring congestion indices on a unique corridor or route segment need only contact the Data and Statistics Bureau with the location and, if available the proposed capacity enhancing project information.

For the purpose of this report, only three corridors have been identified for reporting purposes. They are the Billings-Great Falls, Camino Real, and the CANAMEX corridors, as shown in **Figure SF-1**.

Figures SF-2 through **SF-4** (see page 54) illustrate the CIs on the Existing network for the current and future years.

June 2003

Figure SF-1

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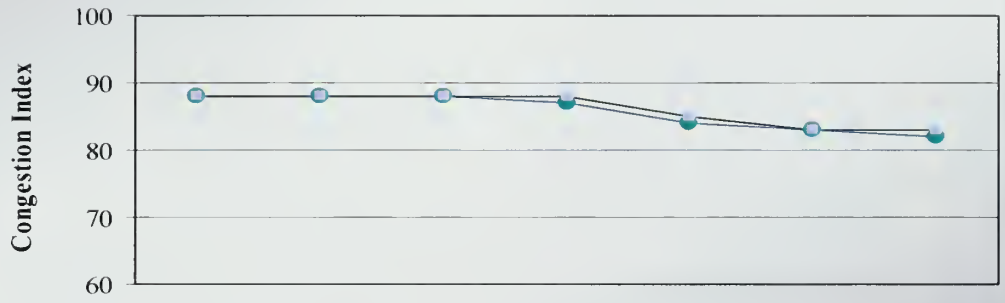
Special Facilities

Figure SF-2

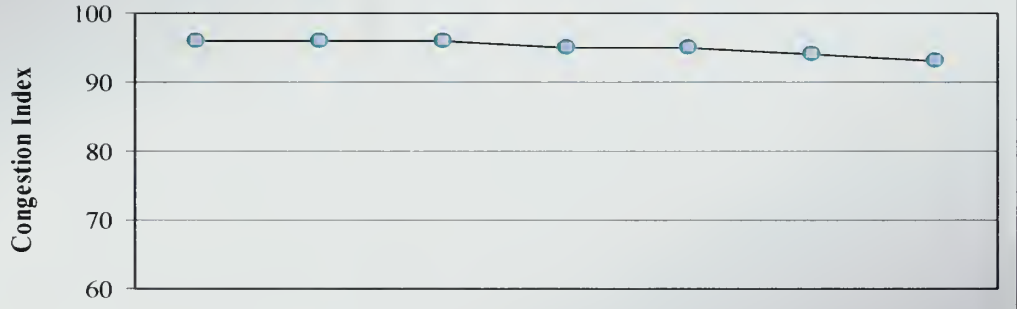
Camino Real Corridor
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	88	88	88	87	84	83	82
E + C	88	88	88	88	85	83	83

Figure SF-3

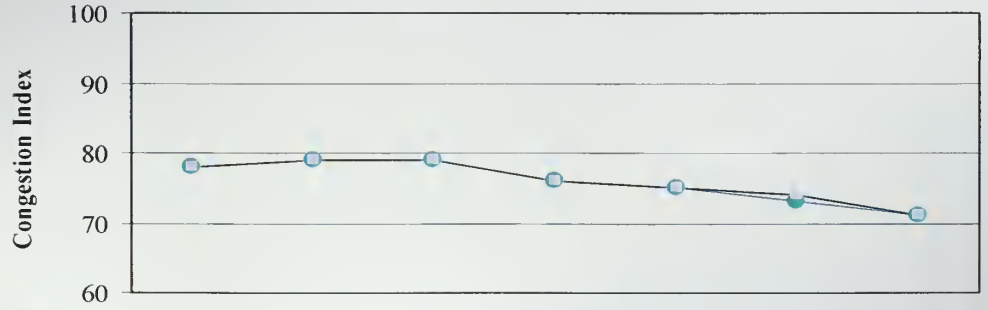
CANAMEX Corridor
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	96	96	96	95	95	94	93
E + C	96	96	96	95	95	94	93

Figure SF-4

Billings/G.F. Corridor
Congestion Indices



Year	1999	2000	2001	2006	2011	2016	2021
Existing	78	79	79	76	75	73	71
E + C	78	79	79	76	75	74	71

Miscellaneous CoMS Information

As mentioned in previous reports, some of the information needed to calculate CIs on the rural corridors was not available anywhere within the Department. Therefore, the data had to be collected. Previously unavailable data items collected include:

- Lane width
- Shoulder width
- Terrain type
- No pass zone locations

While this data was being collected, staff also seized the opportunity to collect other data items such as rumble strip and access point locations that could be utilized for other purposes within MDT. While the collection of rumble strips and access point locations was intended to be a one-time only data collection effort, staff has continued to update this data on an as-needed basis.

The above data items are far from all-inclusive, however, they represent items that can be reported in many different ways and can also be mapped out for informational purposes. Anyone wishing further details on any of these data elements should contact the Data and Statistics Bureau.

As we all know, collecting data in a state the size of Montana is a very time consuming task. To deal with time constraints and staffing limitations, the Data and Statistics Bureau has embraced the roadway images as an invaluable source of information. But re-shooting the state's highway infrastructure is in itself a Herculean task. Bear in mind the CoMS Existing Network portrayed in this report reflects inventory from the most current images available and will remain as such until new roadway images are available.

Alternative accessible formats of this
document will be provided upon request.
For further information call:
444-7238 (V) or 444-7696 (TTY).